THE PUBLIC INTEREST ENERGY RESEARCH (PIER) PROGRAM

REQUEST FOR PROPOSALS
RFP #500-03-501

For

Electric Energy Storage Demonstration Projects in California

State of California
California Energy Commission
July 31, 2003

Questions or clarifications about this RFP should be directed to:

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California Energy Commission
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This RFP is available on the following Web Sites:

Energy Commission	www.energy.ca.gov/contracts
California State Contracts Register	www.cscr.dgs.ca.gov/cscr

The Terms and Conditions for this RFP are available at the following Web Sites:

General Terms and Conditions	www.energy.ca.gov/contracts

Copies of this RFP may be obtained by writing or calling:

California Energy Commission
1516 Ninth Street, MS-18
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Table of Contents

9 (C)	Project Budget Forms (Agreement Exhibit C)
10 (D)	List of Contacts, Key Personnel, and Key Subcontractors (Agreement Exhibit D)
11	Customer References
12	Instructions for Completing Selected Sections of this RFP

Volume 3 Confidential Information

13 (E)	Confidential Deliverables and Pre-existing Intellectual Property List (Agreement Exhibit E)

Other Attachments

14	Benefits and Market Analysis

Note that several of the RFP Attachments will become exhibits to future Agreements as shown by the Agreement exhibit letter in the title.

I. Introduction

1. How is this RFP Organized?

This Request for Proposals (RFP) is organized into the following sections:

Section I	Introduction
Section II	Goals and Objectives of this RFP
Section III	Market-Based Aspects of the Demonstration Program
Section IV	Evaluation Process and Criteria
Section V	Administrative Information
Section VI	Proposal Format and Required Documents
Section VII	RFP Attachments (Including Forms)

2. What is the Schedule for the RFP?

Key activities and dates for this RFP are presented below. This is a tentative schedule. Please call the Commission Contracts Office to confirm dates.

ACTIVITY	Action Date
RFP Release	July 31, 2003
Pre-Bid Conference, Sacramento, CA	August 21, 2003
Deadline for Submittal of Questions	August 21, 2003
Distribute Questions/Answers and Addenda (if any) to RFP	September 8, 2003
Due Date for Notice of Intent to Bid	September 11, 2003
Publishing deadline for DVBE Advertising *	**September 15, 2003**
Deadline to Submit Proposals	**September 29, 2003 5:00 p.m.**
Interviews with Bidders (if necessary)	October 27 – November 4, 2003
Posting of Notice of Proposed Award	November 14, 2003
Commission Business Meeting to Approve Agreements	January 21, 2003
Agreement Start Date	March 1, 2004
Latest Agreement Termination Date	March 31, 2008

*** Your proposal will be rejected if the first day of DVBE advertising is later than August 15, 2003.**

3. Will There be an Opportunity to Meet with Representatives of the Commission about the RFP?

Yes. There will be one Pre-Bid Conference; participation in this meeting is **optional** but encouraged.

The Pre-Bid Conference will be held at the date, time and place listed below. Please call (916) 654-4392 or refer to the Commission's website at www.energy.ca.gov to confirm the date and time.

August 21, 2003
9 a.m. to 12 noon
California Department of Social Services
Room 102, Building OB9
744 P Street
Sacramento, CA 95814

4. How Do I ask Questions about the RFP?

During the RFP process, questions or clarifications about this RFP must be directed to the Contracts Officer listed in the following section. You may ask questions at the Pre-Bid Conference, and you may submit written questions up to the close of business on the day of the Pre-Bid Conference. Questions may be submitted in writing via mail, electronic mail, FAX, verbally and by phone. After the Pre-Bid Conference, question and answer sets will be mailed to all parties who requested a copy of this RFP from the Commission Contracts Office and all that attended the Pre-Bid conference. The questions and answers will also be posted on the Commission's website at:

http://www.energy.ca.gov/contracts/index.html.

Any verbal communication with a Commission employee concerning this RFP is not binding on the State and shall in no way alter a specification, term, or condition of the RFP.

5. Who Do I Contact for Information Regarding the RFP?

Jeffrey Rowe, Contracts Officer
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6. What is the Purpose of this Request for Proposals?

The Commission is initiating this Electric Energy Storage (EES) demonstration program to facilitate turnkey, grid connected applications of EES to solve existing problems in California and by extension the rest of the US. The term turnkey, as used in this RFP, means that Bidders must design, test, deliver, install, demonstrate, and operate an EES system. The market-based approach of this RFP is being used to encourage demonstrations in California.

The Commission is issuing this RFP to select contractors to deliver turnkey, electric, grid-connected EES demonstration projects in California. These demonstration projects are expected to use EES technologies to provide alternatives to existing electricity energy sources, improve the reliability of the electricity delivery system, reduce costs of operations, improved energy efficiency and provide increased environmental stewardship in California. The selected projects are also expected to clearly demonstrate value to both California and (by extension) the national energy marketplace for the identified applications. This RFP contains information regarding:

- The acceptable applications of EES technologies,
- The methodology used to determine the value of proposed EES applications,
- The eligibility requirements and evaluation process,
- Instructions for preparing proposals to be submitted by interested Bidders,
- The format in which proposals must be submitted,
- Information and materials to be included in a proposal, and

- Bidder's other responsibilities.

Please note that the information and guidance provided in this RFP are applicable only to this solicitation.

7. What is the Public Interest Energy Research (PIER) Program?

In 1996, Governor Wilson signed into law Assembly Bill (AB) 1890 (1996 California Statutes, Chapter 854) which provided authority for a fundamental restructuring of California's electric services industry. Among other things, AB 1890 added sections 381 to the Public Utilities Code, requiring at lease $62.5 million be collected annually from investor-owned electric utility ratepayers for "public interest" energy research, development and demonstration (RD&D) efforts not adequately provided by competitive and regulated markets. The Commission administers these funds through the PIER program.

Since the funds for the PIER program are paid by specified investor owned utilities (IOU) electricity rate payers, the RD&D efforts supported by these funds must provide benefits to these electricity ratepayers.

The Commission's RD&D Strategic Plan identifies the overall mission of the PIER program as follows:

"The mission of the 'Public Interest Energy Research' program is to conduct public interest energy research that seeks to improve the quality of life for California's citizens by providing environmentally sound, safe, reliable and affordable energy services and products. 'Public interest energy research' includes the full range of research, development and demonstration activities that will advance science or technology not adequately provided by competitive and regulated markets."

The PIER program supports public interest energy RD&D that will help improve the quality of life in California by bringing environmentally safe, affordable and reliable energy services and products to the marketplace. The PIER program awards contracts for the most promising public interest energy research by partnering with RD&D organizations including individuals, businesses, utilities and public or private research institutions. PIER project efforts are focused on the following RD&D program areas:

- Industrial/Agricultural/Water End-Use Energy Efficiency
- Renewable Energy Technologies
- Energy Systems Integration
- Environmentally-Preferred Advanced Generation
- Residential and Non-Residential Buildings End-Use Energy Efficiency
- Energy Related-Environmental Research

Additional information about the PIER program and specific details about each of these PIER research program areas can be found on the Commission's Website at http://www.energy.ca.gov/pier/index.html.

8. What is the Link with DOE's Energy Storage System Program?

The U.S. Department of Energy (DOE) is interested in this solicitation and may participate in the selection of the proposals under this RFP. The mission of the DOE Energy Storage Systems Program is to develop advanced energy storage systems in partnership with industry to:

- Increase technology choices in deregulated, competitive electricity markets
- Increase the value of renewable and distributed resources
- Minimize costs incurred from power quality and reliability problems

It is DOE's vision that advanced energy storage systems will be fully integrated with advanced power electronic controllers on the Nation's transmission and distribution networks, thereby ensuring reliable delivery of electricity at levels of power quality sufficient to meet the stringent consumer needs in the digital economy. Advanced energy storage systems will be integrated with distributed energy resources and renewables to provide optimum market value to the producer and user.

Enhanced energy storage can provide multiple benefits to both the power industry and its customers:

- Improved stability and reliability of transmission and distribution systems
- Increased use of existing equipment, deferring or eliminating costly upgrades
- Improved availability and market value of distributed generation sources
- Improved power quality and reliable delivery of electricity for customers as a result of addressing the $150 billion estimated annual cost due to power quality problems

Additional information about the DOE Energy Storage Systems Program can be found on the Department of Energy Internet Site at:

www.eere.energy.gov/der/energy_storage/energystorage.html

9. Who can bid on this RFP?

This is an open solicitation, and both private and public entities (including Universities and DOE National Laboratories not involved in the RFP review or selection process) are encouraged to respond to this solicitation. This solicitation is not limited to a certain group of Bidders. However, all EES demonstration sites must be in California.

10. What is the Funding Level for this RFP?

The Commission is anticipating providing up to $5 million in funding for this RFP. The Commission envisions awarding 4-5 contracts for this effort. The total amount funded may be less than the $5M anticipated, based on proposals achieving the minimum passing score. No individual or organization may submit more than one proposal in response to this RFP. The Commission will award no more than one Agreement under this RFP to any one organization or entity. The Commission also reserves the right to make no awards.

11. What are the Match Fund Requirements?

Federal and State of California, including PIER R&D and Renewables, funds cannot be used as match funds under this RFP.

Cash match funds are considered in eligibility screening, and cash match funds and in-kind match funds are also evaluated and scored as part of the technical and policy evaluation criteria. For additional information regarding match funds, see Section IV, Evaluation Process and Criteria, and Section VI, Proposal Format and Required Documents.

The ratio of match funds to PIER funds should reflect the ratio of private benefits to public benefits resulting from successful completion of the project. In other words, projects providing a higher percentage of private benefits and lower percentage of public benefits should contribute a higher percentage of match funds.

Projects whose results are more likely to lead to products and services that can be commercialized in the near future will generally need a higher percentage of match funds than projects whose results are further removed in time from commercialization.

Match funds may be cash, in-kind services or a combination of the two. In-kind contributions include, but are not limited to, donated labor hours, equipment, facilities, property, and agreements with project partners to bring the results of the project to the market. Cash match funds are the Bidder and team member expenditures specific to the project and made during the agreement duration for allowable travel expenses (other than labor hours), equipment, material, and miscellaneous purchases, and payments for subcontracted work.

Equipment, facilities (e.g. laboratory space) and most property can count as match funds as long as they are fully dedicated to the project for the time the equipment, facility or property is required by the agreement, and as long as the value of the contribution is based on documented market values or book values and is depreciated or amortized over the term of the project using standard accounting principles. Equipment, facilities and property that do not qualify as match funds include such items as standard office supplies and property or equipment that is part of the Bidder's normal business activity (desks, typewriters, telephones, computers, software, etc.).

Prior investments in the research to be conducted in this project do not qualify as match funds. Also, funding from other Commission projects or agreements does not qualify as match funds.

Budgets must show match fund contributions at the task level and aggregate them for each project. Match fund contributions must be spent concurrently with PIER Project funds, and only on the projects described in the proposal.

PIER funds cannot be spent until the Department of General Services, Office of Legal Services (DGS-OLS) approves the Agreement which has already been signed by both the Contractor and the Commission. Match funds may be spent between the date the Commission approves the Agreement and the date the Agreement is approved by DGS-OLS subject to prior written approval by the Commission Contract Manager.

The Commission reserves the right to review and approve or disapprove the crediting of contributions and the amounts of those contributions as match funds. The loss of match funds during the Agreement is a reason for the Commission to hold an additional Critical Project Review and may result in the termination of the Agreement.

12. Is Equipment Purchase Allowed?

Bidders are encouraged to use their own funds as well as other sources of funds which would be considered match funds to procure and/or build equipment. If State funds are used to purchase or build equipment, the State may wish to retain ownership interest in the equipment. In order to avoid issues regarding ownership of equipment, Bidders are encouraged to not use PIER funds for equipment. (See Attachment 7, Agreement Terms and Conditions for specific requirements.)

13. What is the State's Definition of Equipment?

An item that costs more than $5,000 and has a useful life of more than one year falls into the equipment category; if under $5,000, it is not considered equipment and would be budgeted in the materials category. If items are purchased that have incremental costs of less than $5,000 but when combined (the product) exceeds $5,000, the items should be budgeted in the equipment category. If the product has been capitalized and exceeds $5,000, it should be budgeted as equipment. Subcontractors/vendors providing equipment should be budgeted in the equipment category, not the subcontractor category. Labor associated with installation or construction of equipment is not budgeted in the equipment category. (See RFP Attachment 7, Agreement Terms and Conditions, paragraph 4. Definitions.)

14. Is Repayment or a Royalty Fee Required?

There are two options under this solicitation: PIER funds will be provided (a) with royalty payment provisions; or (b) through an exemption, without royalty payment provisions. Repayment is based on royalties once the Contractor generates gross revenues, or a subcontractor generates gross revenues that are paid to the Contractor.

Except as otherwise provided in the "Royalty Exemption Option" discussed below, all parties receiving funds from this solicitation will be required to repay one and one-half percent (1½%) of the sales price of each program-related product or right for fifteen (15) years from the first date of sale, as further defined in the PIER agreement terms and conditions (RFP Attachment 7). Alternatively, there is a "Buyout Option" of two (2) times the amount of the PIER funding award, payable within two (2) years from the date royalties are first due.

The Commission, the University of California, and the U.S. Department of Energy have previously negotiated the handling of repayment requirements for PIER RD&D agreements.

15. What is the Repayment Exemption?

At the discretion of the Commission, a research program may be exempted from the general royalty requirements of this solicitation if:

- The research program in question is primarily expected to produce new knowledge and/or understanding of the subject under study, rather than any commercial application of that knowledge, within the next 10 years (e.g., basic research); and

- The Bidder agrees to place all intellectual property developed from the program into the public domain.

All Bidders are required to indicate their choice of royalty funding mechanisms on RFP Attachment 2, "Application and Program Information Form," section 6. Bidders who select the box for "PIER funds without royalty provisions" must provide an explanation in the space provided.

II. Goals and Objectives of this RFP

16. About this Section

This section explains, in more detail, the areas of emerging EES technology applications that are targeted in this solicitation. This section also includes information on the turn-key requirements of any proposed project. Finally, this section provides an overview on the data acquisition and data reporting requirements.

17. Scope and Context

The EES demonstration projects addressed in this RFP will focus on turnkey, grid-connected demonstration projects in California that provide definable and quantifiable benefits. The Commission recently adopted an Energy Action Plan in partnership with the California Power Authority and the California Public Utilities Commission. The issues that are addressed in this RFP were developed under the Energy Action Plan. The Energy Action Plan is available on the Commission's Web Site at http://www.energy.ca.gov.

Of primary interest to the Commission and DOE Energy Storage Initiative are EES applications that provide alternatives to central electric energy sources and capacity, cost savings, reliability improvements, improved energy efficiency and/or environmental improvement benefits to several of the PIER project areas. The following is a sample list of possible applications of EES:

- Bulk electricity price arbitrage
- Transmission and distribution upgrade deferral
- Transmission and distribution Support
- Time-of-use energy cost management
- Demand charge management
- Electric service reliability
- Renewables capacity firming
- Renewables contract time-of-production payments

The above list contains examples of pre-defined applications. Other potential applications may be proposed. The minimum information required for the Commission to evaluate a non-predefined application is specified in Attachment 12. The Commission reserves the right to accept or reject the non-predefined applications based on the Commission Scoring Committee's assessment of the information provided in the proposal.

18. Turn-Key Grid Connected Demonstration Concept

The intent of this solicitation is to fund turn-key, grid connected demonstration projects.

- Bidders must address all elements of a "turn-key" solution. At a minimum they must address:
  - Complete project definition and letters of interest from the end user and the servicing utility.
  - Pre-installation planning and documented project approval for any required permits or regulatory approvals.
  - Demonstration project installation, commissioning, operation and maintenance throughout the contract term and a plan for post-contract disposition of project site and equipment.

- Pre-demonstration testing, commissioning testing and performance monitoring.
- Safety issues (including public safety issues) are to be address as they are relevant to the individual proposed demonstration. Proposals should also address compliance with applicable National Fire Protection Association (NFPA) codes such as NFPA 1 (Uniform Fire Code) and NFPA 70 (National Electrical Code), applicable building codes, and other Institute of Electrical and Electronic Engineers and American National Standards Institute standards that may apply to the "turn-key" demonstration.

- All demonstration projects under this RFP are expected to be commissioned within 18 months of contract award. Additionally, each demonstration project is expected have a minimum performance period of 18 months. The total project demonstration time is expected to last at least three years.

19. Definition of the Demonstraton Project

Each proposed demonstration project is required to fully explain the following project elements:

- Clear definition of the proposed application of EES technology.
- Quantify expected benefits provided by this application to the end user or host.
- Impact on the grid the project is connecting to and the name of the servicing utility.
- Project schedule for the proposed development, testing, installation, checkout and operation of the EES technology and associated equipment required for the demonstration.
- Expected disposition of the project equipment after the completion of all elements of the demonstration project.

20. Data Acquisition System and Reporting Requirements

It is the intent of the Commission and DOE to provide system level operation and performance information, to include economic benefit information, to the general public on each of the systems funded under this project. In order to meet this objective, it will be necessary that each project has sufficient instrumentation and data transmittal capabilities to allow the collection, storage and transmittal of technical and economic performance data from the EES system. Therefore, the EES system proposed shall include a Data Acquisition System (DAS) for the purpose of providing system operational data to be used in the evaluation and generation of reports on the overall technical and economic performance of the EES system.

To facilitate the collection and analysis of the field performance data and to ensure consistent data collection for all approved projects, the Commission and DOE will identify a Data Management Contractor who will work closely with selected Bidders for collection and transfer of system data. The Data Management Contractor will use the DAS remote download capability to obtain the data from all systems, compile the data and provide analysis of system performance to the Commission and DOE. The Commission and DOE will also identify an Economic Analysis Contractor who will analyze and report on all economic benefit data collected at the project demonstration sites.

Each DAS proposed for the EES demonstration project will provide at least the following capabilities:

- System status reporting
- Historical performance data storage
- Remote data access and download capability
- Economic benefits data tracking, collecting and reporting
- On site reliable data storage capability for at least one calendar year

Prior to the implementation of the DAS in the system design, the Contractor Project Manager shall review the DAS design with the Commission and the DOE Data Management Contractor to insure that it meets the requirements for collecting the appropriate data as defined in the Statement of Work for this RFP. After installation of the DAS at the project demonstration site and prior to site commissioning, an acceptance procedure approved by the Commission in collaboration with the Data Management Contractor shall be executed to insure data is being properly acquired and that the protocol compatibility with the Data Manager's system is verified.

Bidders must provide the requested DAS information in Attachment 12 that will be used in the evaluation of proposals (see page 11 of 12 "Data Acquisition and Reporting"). A task for DAS and benefits reporting has also been written into the Scope of Work Template, and will be included in every agreement that results from this RFP (see Attachment 8, page 12 of 16, "Task n-2 Data Acquisition System Benefits Data Reporting Requirements"). It is the responsibility of the Bidder to ensure that sufficient budget is allocated to meet the DAS requirements.

System reporting requirements:

The Contractor's Project Manager (either the Facility Owner/Customer or the System Manufacturer/Integrator) is responsible for periodic written reports. The proposal shall identify the project team leader who will be responsible for preparation and delivery of these reports.

System operational summary information shall be generated monthly and included in the Monthly Progress Reports. As a minimum, the system operational summary information shall provide the following:

1. A written summary of the economic benefit derived for the month
2. A written summary of all operations and maintenance activities for the month
3. System dispatch information and use patterns associated with the project
4. Energy consumption breakdown of parasitic loads introduced by the demonstration system
5. System performance under typical utility fault conditions (e.g. lightning strikes)
6. System performance under user fault conditions (e.g. fault in customer plant)
7. System reliability, failure rates, and performance summary
8. Utility system operational data after installation of the demonstration system

Annual reports shall be generated that consolidate all the information from the monthly and quarterly reports and summarize the operation of the system for the preceding year. The Commission/DOE Data Management Contractor will provide monthly, quarterly and annual reports on the system electrical performance.

Benefits Data Tracking and Reporting

In addition to the hardware data above, data sufficient to demonstrate the economic benefits defined in the original proposal shall be gathered. For applications proposed that claim multiple benefits, data shall be provided on a monthly basis that adequately supports the claimed benefit for each of the benefits specified in the original proposal. A brief outline of this data and the transmittal method shall be provided in the proposal. The monthly benefits data report containing this information shall be delivered to the to the Commission/DOE project manager and the Commission Program Office no later than the 15th day of each month following the month in which the data was collected.

Historical Performance Data Reporting Requirements

Utility system operational data prior to the installation of the demonstration system is required in order to provide credible baseline data on electrical system performance before and after the installation of the demonstration system. Using a time period of at least six months prior to system commissioning, information concerning load profiles, peaks, overloads, faults, power quality events, and any other information required to fully characterize the operation of the electrical utility at the demonstration site prior to installation of the demonstration system shall be collected by the system owner/operator. Comparison information shall be made part of the Monthly Progress Reports starting after the 2-month anniversary of system commissioning.

Remote data access requirements

A method for providing secure access to data collected by the system, as specified in this section, shall be provided to allow daily uploading of operational data to a central site. Protocols for supporting this remote data upload requirement shall be coordinated with the Commission/DOE Data Management Contractor prior to the implementation of the system to insure standard communications protocol is used to fulfill this requirement.

Data management services at the project site shall be provided as follows:

Prior to the implementation of the DAS in the system design, the project team leader shall review the DAS design with the Commission/DOE Data Management Contractor to insure that it meets the requirements for collecting the appropriate data to monitor the performance of the system. After installation of the DAS at the project site and prior to site commissioning, an acceptance procedure approved by the Commission/DOE project manager in collaboration with the Commission/DOE Data Management Contractor shall be executed to insure data is being properly acquired and that the protocol compatibility with the Data Manager's system is verified.

1. Provide appropriate data collection equipment and capabilities.

2. Provide secure data communications capabilities for data transmittal to the Commission/DOE Data Management Contractor site.
3. Upload comma separated system data files as requested by the Commission/DOE Data Management Contractor.
4. Provide daily local backup to compact disk – read/write. Restore data as needed.

Minimum system recorded parameters

At a minimum, the following system parameters shall be measured, recorded, and transmitted to the Commission/DOE Data Management Contractor for all system operations:

- Events that result in a change of system operational mode,
- Demonstration system response times to changes in operating conditions,
- Energy and power into and out of the storage demonstration system, for each AC phase in the system,
- System load,
- System duty cycle count,
- System Failures/Problems,
- Electrical performance of the Power Conditioning System.

All data shall be time stamped with resolution to 1 millisecond.

Benefit Data Plan

In addition to the hardware data above, the Bidders must gather data sufficient to estimate the financial and economic benefits defined in the original proposed (separately for each benefit proposed when using multiple benefits). A brief outline of this data must be provided in the proposal. The benefits data must be made available on a quarterly basis (as a minimum).

III. Market-Based Aspects of the Demonstration Program

21. About this Section

The underlying philosophy of this storage demonstration program is to foster multiple and significant cost-effective near-term storage applications in California. As a method of maximizing the market impact of storage influenced by this demonstration program, a significant portion of the selection criteria for demonstrations are related to the benefits of storage and its ability to capture potential markets in California over the next decade.

This section of the RFP document provides guidelines that the Bidders must use in describing their potential applications, benefits, and market potential. It also refers the Bidder to the "Electric Energy Storage Benefits and Market Analysis" (or Attachment 14) which offers a methodology and guidance to estimate the value of storage in typical applications, and a set of default economic and energy marketplace assumptions for consideration by the Bidders. The Bidder should also note that Attachment 12 of this RFP contains a set of tables market estimates that must be completed by Bidders.

The benefits and market descriptions in Attachment 14 are not meant to limit the Bidders, but to provide examples of an acceptable and simple methodology to estimate benefits and markets. Alternative approaches to defining California markets over the next ten years may be offered, but they must be adequately justified with solid references, data, and documentation of underlying analysis. The benefits described in Attachment 14 are not the only ones that may be proposed. In fact, creativity is expected. Innovative benefits must be defined as fully as necessary to confirm credible market potential.

It is the responsibility of the Bidder to assess the estimated benefits of the demonstration itself, and obtain written acceptance from the host of the demonstration that these benefits could be obtained, if the demonstration is successful.

Bidders may deviate from the framework defined in Attachment 14 only as absolutely necessary to provide sufficient information to fully evaluate their proposed application (and benefit streams) and it's projected California market. If any of the marketplace parameters used by the Bidders differ from the default values (defined in Attachment 12), a convincing argument must be made for the alternative values, or the market and benefits estimations may lose credibility.

Consider three examples:

1. assuming a peak load growth in the next decade for California other than the default would be a needless and counterproductive deviation.
2. adjusting for the demonstration's estimated variable O&M would be expected
3. a completely innovative storage application might well require many additional input assumptions; this would be expected (but will make evaluation by the RFP response team time-consuming).

Claims of multiple and concurrent benefit streams from a single device are acceptable, but must include corroborating evidence/confirmation that the applications are physically, operationally and contractually compatible. For example, a device used for 200 hours for

one purpose can be used for other purposes most of the rest of the year, only if it is anticipated that neither benefit stream would be appreciably compromised.

Attachment 14 also includes 1) a list of key terms and their definitions, and 2) a definition of and numeric values for baseline economic assumptions that are not application-specific (e.g., fixed charge rate, inflation, discount rate, lifecycle, etc.). Most importantly Attachment 14 provides detailed examples of the estimation of the benefits of storage installed in California, and an upper bound estimate for the market potential of each application listed.

22. Characterization of Market-Based Criteria

The Bidders need to complete several tables (see Attachments 12 and 14 of this RFP) showing their estimates of the market–based criteria listed below, and supplying sufficient calculational detail to support the estimates:

- Demonstration benefit to demonstration cost ratio (Demo B/C)
- Mature storage technology benefit to mature cost ratio (Mature B/C)
- Ten year market estimate in CA (in MW of peak capability)
- Ten year total Storage Market Economic Benefits in California ($Million)

Attachment 14 shows examples of how to estimate the benefits of storage for various applications, and provides upper-bounds for the market potential which the Bidders must estimate for their specific technology and application.

23. Use of the Market-Based Criteria in Demonstration Selection

These Market-based criteria will be used both for screening demonstration proposals and for ranking them for selection; of course other non-market-based criteria are also used for proposal screening, scoring and selection.

See Section IV for a detailed discussion of how all criteria are used to evaluate the proposed demonstration projects.

IV. Evaluation Process and Criteria

24. About this Section

This section explains the overall evaluation process and the technical and policy evaluation criteria. It describes how the proposals will be evaluated for completeness, eligibility and fundamental scientific feasibility. It also describes the evaluation stages, preference points, and scoring of all proposals.

The entire evaluation process from receipt of proposals to the posting of the Notice of Proposed Award is confidential.

A Bidder's proposal will be evaluated and scored based on its response to the information requested in this RFP. During the evaluation and selection process, Commission staff, in their sole discretion, may interview a Bidder either by telephone or in person at the Commission, and/or conduct a site visit at the Bidder's facilities for the purpose of clarification and verification of information provided in the proposal. However, these interviews may not be used to change or add to the contents of the original proposal.

25. Proposal Screening Process

Administrative, Completeness, Technical Eligibility and Feasibility Screening

All proposals will be initially screened for compliance with administrative requirements, completeness, technical eligibility and fundamental scientific feasibility. Proposals that fail the administrative, completeness, or technical eligibility and feasibility screening will not be evaluated further under this RFP.

A. Administrative Screening

If your proposal fails any of these items, it will be rejected immediately.

1. The proposal must be received at the Commission Contracts Office by the time and date indicated in Section I.

2. The proposal must not be marked confidential in its entirety. Proposals that are marked confidential in their entirety will be rejected from further evaluation under this solicitation.

3. The proposal must document legal compliance with either the "participation" or "good faith efforts" required pursuant to the Disabled Veteran Owned Business Enterprises (DVBE) program. Proposals not documenting compliance with the DVBE program will be rejected from further evaluation under this solicitation.

4. The proposal must not have costs, cost bids, or rates marked as confidential.

B. Completeness Screening

A proposal must include the contents described in RFP Section VI of this RFP or the proposal will fail the completeness screening and will be rejected prior to the technical evaluations. In particular, proposals will be screened for completeness on the basis of

whether or not the proposal contains sufficient information to enable a useful evaluation to be conducted.

C. Technical Eligibility and Feasibility Screening

To be eligible for possible funding under this solicitation, proposals must meet all of the following technical eligibility and feasibility criteria. Proposals that fail any of the following will not be evaluated further under this RFP. Complete the information requested and screening and evaluation forms included in Attachment 12 (Section A) for each area addressed below.

Demonstration Project End User or Host Involvement Clearly Identified

Each proposal must include a signed letter from the end user or host that clearly identifies their interest level, involvement and financial commitment to the proposed demonstration project.

Significant Market Potential for the Application Demonstrated

Proposals must have a market estimate of at least 100MW to pass this screen. Proposals will be screened based on the market estimate of the defined products(s) and the proposed application(s). Each proposal must include the information requested in Attachment 12 and use the methodology defined in Attachment 14.

Minimum Cash Match Funds

The minimum acceptable amount of cash match funds is 20%. Cash match funds are the Bidder and team member expenditures specific to the project and made during the agreement duration for allowable travel expenses (other than labor hours), equipment, material, and miscellaneous purchases, and payments for subcontracted work. Federal and State of California, including PIER R&D and Renewables, funds cannot be used as match funds under this RFP. Cash match and in-kind match funds will also be scored in the technical evaluation section of this RFP.

Benefit to Cost Ratio of Proposed EES Project

The proposal will be screened based on the ratio of the expected benefit received from the proposed EES Project over 10 years compared to the expected cost of the proposed EES project over 10 years. The expected benefit to cost ratio for the demonstration project must be at least 0.30 to pass the screen. The expected benefit to cost ratio for the mature EES systems must be at least 1.00 to pass the screen. Each proposal must provide the information requested in Attachment 12 to satisfy this screen. The methodology defined in Attachment 14 must be used in determining these ratios.

Proposed Project Qualifies for PIER Funding by Advancing the Commercial Market Transition of EES Technology

The proposal must provide a clear and convincing explanation of why PIER funding is appropriate and needed for the proposed activities. Each proposal must address how the

proposed demonstration project will advance the commercial market transition of EES technology. Provide the information requested in Attachment 12 on specific areas to be addressed.

26. How Will Proposals be Scored?

Overview of the Evaluation Scoring Process

Proposals must pass the Administrative, Completeness, Technical Eligibility and Feasibility Screenings to be eligible for the technical evaluation scoring by a Proposal Scoring Committee. The Proposal Scoring Committee may consist of Commission and DOE staff, staff of other agencies, private consultants or other designated representatives of the State to evaluate the proposals. During the evaluation process, all proposal evaluators and scorers will keep the contents of the proposals confidential.

The Proposal Scoring Committee will evaluate and score proposals according to the evaluation criteria described below. Upon completion of the technical scoring, the Proposal Scoring Committee will prepare a ranked list of the proposals, in descending order, based upon each proposal's total technical score. All proposals receiving a weighted score of sixty (60) points or more will be considered for possible funding. Proposals receiving a weighted score of less than sixty (60) points are not eligible for funding. If necessary, the Proposal Scoring Committee will review and compare the ranked proposals for duplicativeness. Lower scoring proposals that are duplicative of higher scoring proposals will not be considered for funding. The Commission's RD&D Policy Committee will recommend how far down the ranked list of proposals scoring sixty (60) points or higher and are non-duplicative proposals that will receive contract awards.

If a successful Bidder decides to withdraw a proposal, or if a Bidder will not sign a proposed agreement within the allotted time, the proposal will be disqualified from this award.

Scoring Scale

The Scoring Committee will give a score from zero to four, including half numbers, for each criterion described below, based upon the information provided by the Bidder's proposal. Each score will then be multiplied by a weighting factor to obtain the total points for that criterion. Scores will be assigned in accordance with the following guidelines:

Score	Proposal Response
0	Not responsive to the criterion
0.5 or 1	Response is minimal to relevant considerations under the criterion
1.5 or 2	Responds partially to relevant considerations under the criterion
2.5 or 3	Responds satisfactorily to all relevant considerations under the criterion
3.5 or 4	Responds completely, accurately and convincingly to all relevant considerations under the criterion

27. What are the Evaluation Criteria?

All proposals that pass the completeness, technical eligibility and feasibility screening will be evaluated for merit based on the following technical and policy evaluation criteria:

1. Likelihood of Technical Success of the Demonstration Project

(Weighting factor:5 Maximum Weighted Score: 20)

The extent to which the proposal demonstrates that:

a. The demonstration project is defined in clear and understandable terms and addresses all elements of the development, testing, installation, activation, operation and decommissioning or transition of the proposed project.

b. The technical and project risk of the demonstration project is fully defined and the proposal addresses how those risks will be addressed.

c. The prime contractor and all identified subcontractors demonstrate the capability and capacity to perform as expected.

d. The end customer, host and/or beneficiary is clearly an active part of the project and has made clear statements and initiated necessary actions supporting the demonstration.

e. The proposed demonstration project costs and implementation schedule are realistic and success oriented.

2. Estimate of Market Potential

(Weighting factor: 2; Maximum Weighted Score: 8)

Market Estimate: The amount of energy storage equipment (MW), as estimated by project teams, that will be deployed, for the application to be demonstrated, given reasonable assumptions about the number and size of loads that could be served, between the years 2006 and 2015 (ten years).

Points	Market Estimate
0.0	<100MW
0.5	100MW to 125MW
1.0	>125MW to 150MW
1.5	>150MW to 200MW
2.0	>200MW to 300MW
2.5	>300MW to 450MW
3.0	>450MW to 650MW
3.5	>650MW to 950MW
4.0	>950MW

(Note: 100 MW is the minimum value used for screening).

3. Estimate of Market Benefits

(Weighting factor: 2; Maximum Weighted Score (Cost): 8)

Economic Benefit to California: The amount of California-specific gross economic benefits ($ Billion) associated with use of the storage, for the application demonstrated, between the years 2006 and 2015 (ten years). Gross economic benefit is calculated as $ benefit/kW for the application multiplied by the market estimate.

Points	Market Benefit
0.0	<$50M
0.5	$50M to $100M
1.0	>$100M to $150M
1.5	>$150M to $250M
2.0	>$250M to $400M
2.5	>$400M to $550M
3.0	>$550M to $650M
3.5	>$650M to $1B
4.0	>$1B

4. Likelihood of Market Success of the Demonstrated Technology or Product

(Weighting factor: 3; Maximum Weighted Score: 12;)

This criterion has two elements:

1. Mature Benefit/Cost Ratio: Ratio of the benefits estimated for a mature storage plant like the one being demonstrated divided by the cost to own and operate a mature version of the storage plant being demonstrated. Benefits and costs calculated are the net present value of benefits and costs incurred over ten years (i.e., for a plant operating for ten years).

2. Probability of Market Development: Numerically this criterion's value is the probability that the market vision (from Bidders) will actually materialize as described, assuming technical success of the demonstration. That is the ultimate goal of the program, to foster development of markets involving high-value uses of energy storage.

Factors considered may include:

- Clarity and credibility of project team's market vision, including
  - what target market/niches are,
  - who beneficiaries are and whether beneficiaries can and will embrace the storage option,
  - how end-users would be identified and how storage systems would be sold/distributed, partnerships, etc.
- Understanding of challenges associated with creating products from technology (commercialization).

- Commitment of project team to commercializing the storage system to be demonstrated.
- Whether there is a less expensive alternative for the applications and benefits.

Criterion Scoring

Mature B/C:

Points	
0.0 for B/C < 1.0	
0.5 for 1.0 to 1.250	
1.0 for 1.251 to 1.50	
1.5 for 1.501 to 2.25	
2.0 for 2.251 or greater	

Probability of Market Development:

Points	
0.0	Market development not clearly defined or unlikely
0.5	Market development defined but unclear areas are present
1.0	Market development adequately defined
1.5	Market development adequately defined plus probability of success better than average
2.0	Market development clearly defined, easy to follow and shows high probability of success

5. Impact and Benefits for California

(Weighting factor: 2; Maximum Weighted Score: 8)

The extent to which:

a. The proposal clearly addresses the impact and benefits for California of the in areas of increased California business opportunities, increased jobs, environmental, and other improvement areas based on the commercial acceptance of the demonstrated technology and new products.

b. The proposal provides sufficient supplemental information to support the impact and benefits statements provided.

6. Project Manager identified and the proposed project team has the appropriate qualifications

(Weighting factor: 3; Maximum Weighted Score: 12)

The extent to which:

a. The Project Manager has specific organizational, administrative, and leadership skills and a proven track record for managing demonstration of electric energy technology projects successfully including capability in administering the contract to control costs,

maintaining the project schedule, providing quality control of the deliverables produced by the team, and communicating effectively;

b. The structure of the team provides clear roles and responsibilities among the team members and clear lines of communications are in place to ensure that the responsibilities are successfully met;

c. The team has the technical experience (appropriate engineering and contracting licenses) and proven skills in the specific technical research area being proposed and has successfully commissioned engineering projects; it is mandatory that one or more of the team members has documented first hand experience in the development and management of turnkey electric energy technology projects;

d. The team has the experience, skills, and market connections to help ensure market transfer of the products and knowledge that result from the project.

7. Project Funding

(Weighting factor: 2; Maximum Weighted Score (Cost): 8)

a. Points will be awarded for this criterion on the following scale:

Points	Total Project Funding (Includes Match Funds) per Proposal
0.0	More than $3,000,000
0.5	$2,250,000 to $2,999,999
1.0	$2,000,000 to $2,249,000
1.5	$1,750,000 to $1,999,999
2.0	$1,500,000 to $1,749,999
2.5	$1,000,000 to $1,499,999
3.0	$750,000 to $999,999
3.5	$500,000 to $749,999
4.0	Less than $500,000

8. Project Cash Match Funds

(Weighting factor: 3; Maximum Weighted Score (Cost): 12; Federal and State of California, including PIER R&D and Renewables, funds cannot be used as match funds under this RFP.

Cash match funds are the Bidder and team member expenditures specific to the project and made during the agreement duration for allowable travel expenses (other than labor hours), equipment, material, and miscellaneous purchases, and payments for subcontracted work.

a. Points will be awarded for this area on the following scale:

Points	Cash Match Funds
0.0	Less than 20.0%
0.5	20.01% to 22.50%
1.0	22.51% to 25.00%
1.5	25.01% to 30.00%
2.0	30.01%to 35.00%
2.5	35.01% to 40.00%
3.0	40.01% to 55.00%
3.5	55.01% to 75.00%
4.0	75.01% or more

9. Project Budget

(Weighting factor: 3; Maximum Weighted Score (Cost): 12)

The extent to which:

a. The project budget information provided is consistent with the scope of work and itemizes reasonable costs for personnel, subcontractors, equipment, operating expenses, fees, etc., for each task;

b. The PIER funds requested are appropriate, relative to the goals and objectives of the project. The PIER funds requested are commensurate with the value of public benefits not adequately addressed by regulated or competitive markets which the project will provide;

c. The proposed match funds (both in-kind and cash match) reflect a commitment by the Bidder, subcontractors, end customer or host and the other key members of the proposal team. The proposal addresses an alternative plan to successfully complete the demonstration project if the identified match funds are significantly reduced or lost;

d. Budgets indicate the total budget, the PIER reimbursable budget, and the match funds budget, indicating all sources of funding, for each task described in the scope of work;

e. Budgets are itemized in sufficient detail to justify the expenditures by task. The budget includes the required information for personal services, subcontractors, operating expenses, fees and total expenditures; and

f. The budget shows that key personnel and key subcontractors will be committed to the project for the appropriate number of hours and functions to accomplish the activities described in the work statement.

Summary of All Evaluation Scores

- Weighting Factor Totals: 25
- Total Possible Points: 100
- Total Possible Cost Points: 40
- Minimum Passing Score: 60

Duplicative Projects

The Commission desires to demonstrate a diverse set of EES technologies and applications through the execution of this RFP. The possibility exists that the Commission will receive two or more proposals that are considered duplicative. The Commission desires to avoid the situation in this RFP where based solely on proposal score, PIER funding would be used to fund substantially similar applications of EES technologies catering to the same markets (duplicative projects). The Commission will select only the higher scoring proposal from that group of duplicative proposals. Thereby, lower scoring proposals that are not duplicative will be funded over higher scoring proposals that have been identified as duplicative. The Commission reserves the right to determine when two or more proposals are considered to be duplicative.

When the Commission determines that two or more proposals appear duplicative, the following evaluation will be performed on the identified proposals. Proposals that receive "yes" answers from all four categories below will be determined to be duplicative.

	Duplicative Project Evaluation	YES	NO
1.	The Proposed EES projects being compared utilize substantially similar technology. 1. Battery: For storage systems based on internal chemistry reactions, the technology is using substantially similar internal chemistry such as: • Zinc bromine (ZnBr) • Sodium Sulfur (NaS) • Polysulfide Bromide battery (PSB) • Lithium Ion (Li-Ion) • Other 2. Flywheel: • Proposed technology has the substantially similar rotating speeds • Proposed technology uses substantially similar composite materials in the flywheel construction 3. Ultracapacitor • Proposed technology uses substantially similar storage medium with the substantially similar energy density, power density and/or charging characteristics. 4. Mini/Micro-Pumped Hydro • Proposed technology uses substantially similar designs 5. Superconductivity • The proposed technology is based on substantially similar materials, cryogenics and magnetics 6. Other		

2.	The proposed EES projects are addressing substantially similar applications.		
3.	The proposed EES projects have identified substantially similar benefits for the economic benefits analysis.		
4.	The proposed EES projects have identified substantially similar markets as their target markets for the market estimates explanations provided in the proposal.		

28. Are There Non-Technical Preference Points?

A Bidder may qualify for up to four categories (listed below) of preference points. Each qualifying Bidder with a score of 60 points or greater will receive the applicable preference points for each applicable category. The sum of the Bidder's evaluation score and preference points will constitute the Bidder's total score. Proposals will be ranked based upon the Bidder's total score. Forms submitted for preference points must be included in Volume 1.

1. **Small Business**

Bidders who qualify as a State of California certified small business or who self-certify under the Federal Government statutes as a small business will receive five percent (5%) preference points based on the cost points received by the highest scored proposal, if the highest scored proposal is submitted by a business other than a certified small business. Instructions for becoming certified by the State of California as a small or disabled veteran owned business is contained in RFP Attachment 5.0.

2. **Target Area Contract Preference Request**

The Target Area Contract Preference Act (Government Code Section 4530 *et seq.*) provides five percent (5%) preference points to California-based companies that perform state contract work in a distressed area. Bidders should complete RFP Attachment 5.1 if they qualify for this preference. If you have further questions or need additional information on this matter, please contact TACPA/LAMBRA Preference Program Group at (916) 375-4609.

3. **Enterprise Zone Request**

The Enterprise Zone Act (Government Code Section 7070, et seq.) provides preference points as an incentive for business and job development in distressed and declining areas of the State. Bidders should review RFP Attachment 5.2 to determine if they qualify for this incentive. If you have further questions or need additional information on this matter, please contact TACPA/LAMBRA Preference Program Group at (916) 375-4609.

4. **Local Agency Military Base Recovery Act**

The Local Agency Military Base Recovery Act (LAMBRA, Government Code Section 7118, et seq.) provides five percent (5%) preference points to California-based companies that perform State contract work in the LAMBRA. Bidders should review RFP Attachment 5.3 to determine if they qualify for this preference. If you have further questions or need additional information on this matter, please contact TACPA/LAMBRA Preference Program Group at (916) 375-4609.

V. Administrative Information

29. About this Section

This section provides Bidders with information on submitting a successful proposal, definitions of important terms, sources of information, how to submit a proposal, confidential information, grounds for rejecting a proposal, and other administrative details. Every technical proposal must establish in writing the Bidder's ability to perform the RFP tasks listed in the Scope of Work.

30. Is there a Deadline For Submitting a Proposal to this RFP?

Yes. All copies of your proposal must be delivered to the Commission Contracts Office during normal business hours and **prior** to the date and time specified in Section I. In accordance with Public Contract Code 10344, proposals received after the specified date and time are considered late and will not be accepted. There are no exceptions to this law.

31. How Should a Proposal be Packaged and Labeled for Submittal?

Bidders must submit the original and 10 paper copies of each volume, including if submitted, the confidential information. The original and copies of each volume must be labeled "Request for Proposal 500-03-501," and include the title of the proposal and the appropriate volume number:

- "Volume 1 – Administrative Section"
- "Volume 2 – Technical and Cost Sections"
- "Volume 3 – Confidential Information"

32. Is There a Preferred Method for Delivery of the Proposal?

A Bidder may deliver a proposal by:

- U. S. Mail
- Personally
- Courier service

Postmark dates of mailing, E-mail and facsimile (FAX) transmissions are not acceptable in whole or in part under any circumstances.

33. What is the Address for Delivery of Proposals?

Label and deliver your proposal, in a sealed package, as follows:

Person's Name, Phone #
Bidder's Name
Street Address
City, State, Zip Code
FAX #

RFP 500-03-501
Contracts Office, MS-18
California Energy Commission
1516 - 9th Street, 1st Floor
Sacramento, CA 95814

34. How is Confidential Information Treated?

From the beginning of the solicitation process until the evaluation is complete and the Notice of Proposed awards is posted or the RFP is cancelled, the Commission is required to hold all information received from Bidders as confidential. However, proposals and all submittals will become public records after the Commission completes the evaluation and scoring process and the Notice of Proposed Awards is posted or the RFP is cancelled.

After the posting of awards,

- confidential materials submitted by unsuccessful Bidders will be destroyed and/or returned. The Commission will not retain confidential submittals from unsuccessful Bidders.
- confidential materials submitted by successful Bidders will be kept confidential, pending incorporation of confidentiality determination as part of the subsequent PIER agreement as appropriate.

A complete application for confidentiality pursuant to Title 20, California Code of Regulations, sections 2505(a) and 2505(c)(2)(A) may be required prior to DGS approval of the agreement at the option of the Commission. These confidentiality specifications and procedures are issued in accordance with Title 20, California Code of Regulations, section 2505(c)(2)(A).

35. What Types of Information Are Considered Confidential?

Consistent with its confidentiality regulations, and the California Public Records Act (Government Code Section 6250 et. seq.), the Commission generally will grant confidential treatment for information that is essential to understanding the proposal, clarifies the status of technology prior to agreement work, or will be an agreement deliverable. Examples include:

- Any information that is patent pending (until a patent has been approved), including patent application numbers
- Technical trade secrets (e.g., detailed technical drawings)
- Marketing/business trade secrets (e.g., energy use data for an individual commercial or industrial facility, pending strategic partnerships with manufacturers)

- Economic/financial trade secrets (e.g., income tax records).

Conversely, the Commission will not allow confidential treatment for certain other types of information. Bidders are cautioned against seeking confidentiality for the following types of information:

- Project descriptions/scope of work (including task descriptions, schedule of deliverables and due dates)
- Proposed project budgets (PIER and match funds), including labor rates, overhead, direct labor, other direct costs, profit, and the like.
- Disabled Veterans Business Enterprise information
- Names of employees, subcontractors and match fund participants
- Test plans and reports
- Progress reports
- Final reports.

The Commission will allow technical and business trade secrets to be reported in separate confidential addenda to test reports and final reports.

36. Are There Important Administrative Details I Should Know?

Disabled Veteran Business Enterprises

This contract is subject to a participation goal of three percent (3%) for certified California Disabled Veteran Business Enterprises as set forth in Public Contract Code Sections 10115, et seq. Refer to, RFP Attachments 4.1 – 4.3.

Bidders must provide DVBE qualifications, experience and duties to be performed under the Scope of Work. Bidders shall provide DVBE project detail participation in the same manner as other subcontractors, including work descriptions, staffing and budget information.

Small Business Preference

Government Code Sections 14835, et seq., requires that a five percent (5%) preference be given to any Bidder who is certified by the State of California as a small business. A Bidder who claims this preference may include a copy of its approved certification form in the Bidder's proposal.

Under this RFP, Bidders may also qualify for the small business points under the Federal Government small business self-certification process.

37. Will the Commission Reimburse the Cost of Preparing a Proposal?

No. The Bidder is responsible for the cost of developing a proposal, and this cost cannot be charged to the State or the Commission.

38. Can the Commission Impose Conditions or Limits on Awards?

Yes. The Commission reserves the right to condition, modify or otherwise limit any and all PIER funding awards made pursuant to this RFP.

39. Can the Commission Cancel or Amend This RFP?

Yes, if it is in the State's best interest. It is the policy of the Commission not to solicit proposals unless there is a bona fide intention to award an agreement. The Commission reserves the right to do any of the following:

- Cancel this RFP
- Amend or revise this RFP as needed; or
- Reject any or all proposals received in response to this RFP.

40. How will I know if the RFP is Revised?

If the RFP is changed or revised, the Commission will prepare and mail a formal written addendum to all parties who requested a copy of the RFP from the Commission's Contracts Office. In addition, the addendum will be posted on the Commission's Web Site: www.energy.ca.gov/contracts and Department of General Services' Web Site: www.cscr.dgs.ca.gov/cscr. The RFP cannot be revised after proposal due date.

41. What If I Find an Error in this RFP Document?

If a Bidder discovers any ambiguity, conflict, discrepancy, omission, or other error in the RFP, the Bidder shall immediately notify the Commission's Contracts Office of such error in writing and request modification or clarification of the document. Clarifications will be given by written notice of all parties who have obtained an RFP, without divulging the source of the request for clarification. The Commission shall not be responsible for failure to correct errors.

42. Generally, What are the Agreement Requirements?

Term of the Agreement

We estimate that the agreement(s) will begin in March 2004. The term of the proposed project work should be for a minimum of three (3) years.

Agreement Terms and Conditions

Standard Agreement Terms and Conditions are included in this solicitation (Section VI, RFP Attachment 7, Terms and Conditions). It is the intention of the Commission to use these Standard Terms and Conditions in all agreements awarded as a result of this solicitation. The format of the signed agreement will change, but the terms will remain the same. The content of this RFP and the Bidder's proposal will be incorporated by reference into the final agreement.

No exceptions to the Terms and Conditions will be considered. Therefore, the Commission recommends that both the Bidder and its subcontractors carefully review, including legal counsel, the agreement terms and conditions before deciding to submit a proposal (See Attachment 2).

Agreement Cancellation
The Commission reserves the right to terminate any agreement awarded through this RFP by providing a 30 day notice to the successful Bidder.

No Agreement Until Signatures and Approvals are in Place
The proposed agreement between the Commission and the successful Bidder is not in effect until the agreement is signed by all of the parties, which includes approval at a Commission Business Meeting, Bidder signature, Commission signature, and approval by DGS-OLS. If, for any reason, a successful Bidder does not sign the agreement documents within a reasonable time, the Commission may eliminate that project from its award list.

Agreement Amendment
An agreement executed as a result of this RFP can be amended by mutual consent of the Commission and the Contractor.

Audit
The Bureau of State Audits may audit an agreement awarded under this RFP up to a period of three years after the final payment or termination of the agreement.

Key Subcontractors
The Bidder must submit the information required in the Project Team Section of the proposal for all Key Subcontractors (those who are budgeted for 25% of the total award or $100,000, whichever is less, or are a DVBE subcontractor). The Bidder must also submit budget pages and supporting documentation for all Key Subcontractors.

The Contractor is responsible for the quality of all subcontractor work, and may only replace Key Subcontractors as specified under the Agreement Terms and Conditions.

Universities
Separate terms and conditions have been negotiated with the University of California (UC). Any UC campus can use these Commission-approved terms in either the role of prime contractor or subcontractor. In the event that a prime award is made to a UC campus, the Commission may choose to make the award as a work authorization within the Commission UC Research Agreement, agreement number 500-02-004. The terms and conditions are available on the Commission's website.

Department of Energy (DOE) Laboratories (Labs)
DOE National Laboratories involved in the RFP review or selection process cannot bid under this RFP.

Separate terms and conditions have been negotiated with DOE for its national labs. DOE labs can use these DOE and Commission-approved terms in either the role of prime contractor or subcontractor. These terms and conditions can be found at www.eere.energy.gov/office_eere/state_agreements.html#calif.

43. What If I Decide To Modify Or Withdraw My Proposal?

Withdrawal/Modification

A Bidder may, by letter to the Contracts Officer, withdraw or modify a submitted proposal before the proposal deadline (due date and time) in the RFP Schedule. Proposals cannot be modified or withdrawn after proposal due date and time.

Immaterial Defect

The Commission may waive any immaterial defect or deviation contained in a Bidder's proposal. The Commission's waiver shall in no way modify the proposal or excuse the successful Bidder from full compliance.

44. How Will I Know If I Have Been Awarded An Agreement?

A Notice of Proposed Awards (NOPA) will be posted for five (5) working days at the Commission's headquarters in Sacramento, and on the Commission's and the DGS' web site. In addition, each Bidder will be mailed a copy of the NOPA.

Upon completion of the five (5) day notice period, agreement documents will be prepared and sent to successful Bidders for their signatures. The Commission will not consider any substantive changes to the agreement "terms and conditions" contained in this RFP.

The Commission will consider final approval of each agreement at a publicly noticed Commission Business Meeting. The Commission at that time may approve more than one agreement.

45. What are the Grounds for Rejection?

A proposal **will be rejected** if any of the following occurs:

- The proposal is not received by the time and date set for receipt of proposal listed in the RFP Schedule Section 1 (Public Contract Code, Section 10344(a)).
- The entire proposal is labeled as confidential.
- The proposal is considered non-responsive to the Disabled Veteran Business Enterprise project requirements.

A proposal **may be rejected** if:

- It does not contain a properly executed Certification Clauses Package (see Attachment 3).
- The proposal does not meet administrative, completeness, eligibility, or feasibility screening criteria.
- It contains false or misleading statements or references which do not support an attribute or condition contended by the Bidder.
- The proposal does not comply with or contains caveats that conflict with this solicitation.
- There is a conflict of interest as contained in Public Contract Code Sections 10410, 10411 and 10365.5.
- The proposal is unsigned.
- The Bidder submits more than one proposal in response to this RFP.

- The proposal is not prepared in the required format described herein.
- The Bidder seeks to have costs treated as confidential.

46. What Happens If My Proposal Is Unsuccessful?

After the NOPA is posted, each unsuccessful Bidder may request a debriefing meeting with the Commission Contracts Office. The debriefing meeting is an opportunity for an unsuccessful Bidder to learn why their particular proposal was not successful and may provide insight to improving proposal preparation for future solicitations.

47. What If I Want To Protest The Awards?

A Bidder may file a protest against the proposed awarding of an agreement. Once a protest has been filed, agreements will not be awarded until either the protest is withdrawn or DGS decides the matter. Alternatively, the RFP may be cancelled with no awards being made.

Please note the following:

- Protests are limited to the grounds contained in the California Public Contract Code Section 10345.
- During the five working days that the NOPA is posted, protests must be filed with the DGS Legal Office and the Commission Contracts Office.
- Within five days after filing the protest, the protesting Bidder must file with the DGS and the Commission Contracts Office a full and complete written statement specifying the grounds for the protest.
- If the protest is not withdrawn or the solicitation is not canceled, DGS will decide the matter. There may be a formal hearing conducted by a DGS hearing officer or there may be briefs prepared by the Bidder and the Commission for the DGS hearing officer consideration.

48. What Happens To My Proposal Documents?

On the Notice of Proposed Award date, all proposals and related material submitted in response to this RFP become the property of the State and a part of the public record, unless the Bidder has submitted an application for confidentiality.

Confidential documents submitted by unsuccessful Bidders will be returned to the Bidder or destroyed by the Commission. Contractor identified and Commission designated confidential documents will be filed separately from the rest of the proposal and agreement documents. Only authorized persons will have access to these designated confidential documents.

49. Key Words and Their Definitions

Agreement: The agreement signed by the Bidder and the Commission, and approved by the California Department of General Services. An agreement is defined in the Public Contracts Code as an agreement or joint development agreement to provide labor,

services, material, supplies, or equipment in the performance of an agreement awarded for or on behalf of the State of California.

Agreement budget: The proposed Commission-reimbursable expenditures AND the Contractor's match fund expenditures for that portion of the project covered by the agreement term.

Agreement term: The start and end dates stated in the agreement between the Commission and the Contractor. The project may be shorter than, coincide with, or extend beyond, the agreement term. However, all Commission reimbursed and matched activities must occur during the agreement term.

Application: How a technology, once it is developed, is used to achieve a desired result or objective.

Baseline condition: The current market condition that the proposed research is intended to impact. A current quantitative snapshot of the technical research proposed and the building market segment potentially affected by the research products to be developed.

Bidder: Organization submitting a proposal to this RFP.

Cash Match Funds: funds the Bidder and team member pledge for expenditures specific to the project and made during the agreement duration for allowable travel expenses (other than labor hours), equipment, material, and miscellaneous purchases, and payments for subcontracted work.

Commission: California Energy Commission.

Contractor: A Bidder, after an agreement with the Commission has been signed and approved.

Cost points: The portion of the proposal evaluation dedicated to budgetary and project funding criteria.

Deliverable: Deliverables are products that incorporate the knowledge and understanding gained by performing the activities and that are submitted to the Commission for review, comment and approval.

Demonstration: Showing the operation or working of a commercial configuration of a product or process.

Development: Advancing technological progress towards a final product or process.

DGS: State of California, Department of General Services.

EES: Electric Energy Storage

Equipment: An item or group of items having a useful life of at least one year, having an acquisition unit cost of at least $5,000, and purchased with Commission funds. ***Equipment*** means any products, objects, machinery, apparatus, implements or tools purchased, used or constructed within the project, including those products, objects, machinery, apparatus, implements or tools from which over thirty percent (30%) of the equipment is composed of materials purchased for the project.

For purposes of determining depreciated value of equipment used in the agreement, the project shall terminate at the end of the normal useful life of the equipment purchased, funded and/or developed with Commission funds. The Commission may determine the normal useful life of such equipment.

In-Kind Match Funds: services that include, but are not limited to, donated labor hours, equipment, facilities, property, and agreements with project partners to bring the results of the project to the market.

Innovation: previously unknown, unused, or not broadly adopted combination of methods, materials, processes, or conditions.

Key Personnel: Those individuals who are critical to the successful completion of the proposed project and are difficult to replace because of their experience, capabilities and knowledge.

Key Subcontractors: Those contractors, subcontractors or vendors to the Contractor who are critical to the outcome of the project (those who are budgeted for 25% of the total award or $100,000, whichever is less). As with Key Personnel, Key Subcontractors may have expertise in the particular field, or have experience that is not available from another source and replacement may significantly affect the project. An employee of the Contractor's subcontractor or vendor may also qualify as "key".

Milestone: A significant point in the performance of the project. Examples include the Critical Project Review, the completion of a task, the submittal of a deliverable, the completed installation of a piece of hardware, and the initial operation of a new system.

Objective: Specific strategies to achieve a goal.

Performance metric: An indicator of the performance of a product that allows the research product to be evaluated on its ability to meet the identified technical, economic and performance goals.

Private benefit: For the purposes of this RFP, private benefit is an economic return or profit that the Bidder or a member of the team acquires for its own advantage.

Project: An RD&D effort intended to advance a specific science and/or technology that is guided by a set of goals and objectives and that is implemented according to a valid technical approach.

Proposal: The formal written response to this RFP from the Bidder. If the Commission funds the proposal, the proposal will be expressly incorporated into the agreement.

Public benefit: A project produces public benefits if it achieves one or more of the following five objectives: (1) improves energy cost or value, (2) improves the environment, public health and safety, (3) improves energy reliability, quality or sufficiency, (4) strengthens the California economy, and (5) provides consumer choice. (Ref: *California Energy Commission Five-Year Investment Plan, 2002 Through 2006, for the Public Interest Energy Research (PIER) Program, Volume 1, Report to the California Legislature*, California Energy Commission, March 1, 2001. Available at http://www.energy.ca.gov/reports/reports_600.html)

RFP: Request for Proposal, this entire document. The competitive process of selecting Contractor (s) to perform research/demonstration.

Research: The careful, systematic, and reasonably thorough study and investigation in a particular field of knowledge, for the purpose of discovering or establishing facts or principles and developing a product or process.

Research, Development, and Demonstration: RD&D.

Stakeholder: An entity, such as an individual, corporation, trade organization, end user, research organization, university, regulatory body, government agency, financial organization, sponsor, or marketer that has a title, financial share, special skill or resource, mandated responsibility, or other direct interest in the undertaking to develop, enable, negotiate, deploy, or commercialize a technology.

State: State of California.

Task: A distinct effort that includes an objective, a description of related activities, a list of deliverables, a schedule, and a budget. Within this RFP, the task is the lowest level of a research effort. Multiple tasks support a project.

Technology: The body of knowledge, system component, device, manufacturing technique, material, etc. that will be improved as a result of the project proposed by the Bidder.

Turnkey: The term turnkey, as used in this RFP, means that Bidders must design, test, deliver, install, demonstrate, operate, and decommission or transition an EES system.

VI. Proposal Format and Required Documents

50. About this Section

This section contains the detailed technical and mandatory proposal format requirements, and the approach to be used by the Bidder for the development and presentation of proposal data. The format is prescribed to assist the Bidder in meeting State bidding requirements and to enable the Commission to evaluate each proposal uniformly and fairly. Format instructions must be adhered to, all requirements and questions in the RFP must be responded to, and all required data must be supplied.

51. Is there a Limitation in the Proposal Format and Length ?

Proposals must be presented in a clear, complete, and concise manner. The first sections of Volume II (RFP Attachments 6 and 12) excluding letters of commitment for match funds must be kept to a combined maximum of forty (40) pages. Bidders are strongly encouraged to limit the length of their proposals, while adequately covering the proposal requirements.

52. Is the Notice of Intent to Bid Required to Submit a Proposal?

Bidders are **encouraged** to submit a "Notice of Intent to Bid" (RFP Attachment 1) to the Commission's Contracts Office by the date and to the address listed in Section I. The Notice may also be faxed to the Commission's Contracts Office at (916) 654-4423. This Notice is not binding on prospective Bidders, but will be used to aid the Commission in planning for the resources needed to evaluate proposals that are subsequently submitted. All Notices received by the Commission will be kept confidential until the Notice of Proposed Awards is posted.

53. What is the Required Format for a Proposal?

All proposals that are submitted under this solicitation must be typed or printed using a standard 11-point font, singled-spaced and a blank line between paragraphs. Pages must be numbered and sections titled. Spiral or comb binding is preferred. Colored photographs and colored graphs are discouraged.

Bidders **must submit** the original and 10 paper copies of Volume 1, Volume 2, and optional Volume 3. Submittals must be printed front to back.

Bidders **must also submit** electronic files of the proposal on CD-ROM or 100 or 250 MB zip diskette along with the paper submittal. Electronic files must be in Microsoft Word '97 and Excel Office Suite '97 formats or better.

Electronic files submitted via e-mail will not be accepted.

Organize your proposal as follows:

Volume 1 Administrative Section

Cover letter
Application and Project Information Form, RFP Attachment 2
Contractor Certification Clauses, RFP Attachment 3
Disabled Veteran Business Enterprise Participation, RFP Attachments 4.1, 4.2, 4.3, as applicable
Small Business Form, if applicable, RFP Attachment 5.0
Target Area Agreement Preference Request Form, if applicable, RFP Attachment 5.1
Enterprise Zone Act Preference Request Form, if applicable, RFP Attachment 5.2
Local Agency Military Base Recovery Area Form, if applicable, RFP Attachment 5.3

Volume 2 Technical and Cost Section

Table of Contents

Executive Summary, RFP Attachment 6
Technical Eligibility and Feasibility Screening, RFP Attachment 12
Turn-key Demonstration Project Information, RFP Attachment 12
Proposed Non-Predefined Application (if used), RFP Attachment 12
Market Estimate and Benefit, RFP Attachment 12
Commercialization Path, RFP Attachment 12
Impact and Benefits to California, Attachment 12
Project Manager and Project Team, RFP Attachment 12
Letter from the Servicing Utility, RFP Attachment 12
Data Acquisition and Reporting, RFP Attachment 12
Project Funding, RFP Attachment 12
Project Match Funds, RFP Attachment 12

} 40 pages maximum

Project Scope of Work (Attachment 8, Exhibit A)
Schedule of Deliverables & Due Dates, and the Gantt Chart (Attachment 8, Exhibit B)
Detailed Budget (Attachment 9, Exhibit C)
List of Contacts, Key Personnel, and Key Subcontractors (Attachment 10, Exhibit D)
Customer References (Attachment 11)

Volume 3 Confidential Information, if applicable

List of Confidential Information and Intellectual Property, RFP Attachment 13
Copy of Confidential Submittal

54. What is Required in Volume 1 - Administrative Information?

The following is a list and brief description of the items (sections) that must be submitted in Volume 1 of each proposal. Bidders should carefully read this format and content information (along with the eligibility, completeness and feasibility criteria, and the evaluation criteria presented subsequently) to understand the relative importance of the information being requested in the proposal. All of the <u>following sections must be included, complete, and accurate, or the proposal will fail the completeness screening</u> and will be rejected prior to technical evaluations.

1. Cover Letter

The Bidder must submit a cover letter on company letterhead signed by a person who has the authority to bind the Bidder to an agreement for the proposed work.

2. Application and Project Information Form

Complete the Application and Project Information Form (RFP Attachment 2). Have a person who is authorized to sign agreements for the Bidder sign the original of this form as the "Authorized Official." Key Subcontractors must also sign this form. Note that this Application and Project Information Form, Item Number 7, Type of Entity or Business Organization, advises submittal of Articles of Incorporation, Partnership Agreement, and Fictitious Name Filing where appropriate.

3. Required Administrative Forms and Documents

A. **Contractor Certification Clauses Package (RFP Attachment 3)**

These are standard terms and conditions required to enter into an agreement with the State of California.

B. **Disabled Veteran Enterprises Participation Requirement (RFP Attachments 4.1, 4.2, 4.3)**

Public Contract Code Part 10115, et seq., and Title 2, California Code of Regulations, Part 1896.62, require all Contractors who are not governmental agencies to pursue Disabled Veteran Business Enterprise (DVBE) participation in their project. Bidders must either have three (3) percent DVBE participation in the project or must document a good faith effort to obtain DVBE participation. Failure to comply with this requirement by submitting complete DVBE forms in the proposal will result in immediate rejection of the bid and disqualification from evaluation, scoring and agreement award.

Use RFP Attachments 4.1 through 4.3, and the instructions on the back of each form, to document DVBE participation and/or good faith efforts. It is important that Bidders thoroughly read the instructions provided on each DVBE form. The DVBE compliance process is as follows:

☒ If you are proposing to **meet the three percent (3%) participation** goals, complete and submit Attachment 4.1 and Attachment 4.2, with a copy of the DVBE certification letter(s) from by California's Office of Small Business Certification and Resources (OSBCR) and acceptance letter from the DVBE.

☒ If you are proposing to **partially meet the participation** goals, complete and submit RFP Attachment 4.1 and RFP Attachment 4.2, and attach a copy of the DVBE certification letter(s) from OSBCR, as well as RFP Attachment 4.3 to demonstrate the good faith effort you performed in your attempt to meet full participation. Your good faith effort must include advertising, which is explained in RFP Attachment 4.3 instructions.

☒ If you have **no DVBE participation** in your proposal, you must complete and submit RFP Attachment 4.3 to demonstrate the good faith effort you performed

in your attempt to meet participation. Your good faith effort must include advertising, which is explained in RFP Attachment 4.3 instructions.

☒ If you or a subcontractor have **applied for DVBE certification**, complete the appropriate RFP Attachments as explained above, and include a copy of the application submitted to OSBCR. Refer to RFP Attachment 5 for instructions on how to apply for certification as a DVBE.

The forms to be used are:

- RFP Attachment 4.1 – Prime Bidder's Certification of Disabled Veteran-Owned Business Participation
- RFP Attachment 4.2 – List of Disabled Veteran-Owned Business Participation
- RFP Attachment 4.3 – Documentation of Good Faith Efforts.

C. Small Business Preference (RFP Attachments 2 and 5.0)

California Government Code Section 14835 et seq., requires that a five percent (5%) preference be given to Bidders who qualify as a small business. To qualify for the small business preference points in the evaluation criteria, Bidders can be identified as a small business through either:

- The State of California, Department of General Services, Office of Small Business Certification and Resources (OSBCR) formal certification processes. The Bidder must include a copy of the approved certification letter or application for certification,

or

- The Federal Government, Small Business Administration (SBA) self-certification guidelines.

Bidders claiming small business preference must indicate either State of California or Federal Government qualification on RFP Attachment 2, Application and Project Information. Small Business points will be awarded only if the Bidder qualifies. A Bidder having a small business subcontractor qualified does not qualify the Bidder for the small business preference points.

55. What is Required in Volume 2 – Technical and Cost Information?

The following is a description of the items (sections) that must be submitted in Volume 2 of each proposal. Bidders should carefully read this format and content information (along with the eligibility, completeness and feasibility criteria, and the evaluation criteria presented above) to understand the relative importance of the information being requested in the proposal. All of the following sections must be included or the proposal will fail the completeness screening and will be rejected prior to technical evaluations.

Below is a detailed description of the information the Bidder should present in Volume 2.

1. Executive Summary

Bidders must use the template provided (Attachment 6) to prepare an Executive Summary (no longer than two [2] pages). The instructions provided in Attachment 6 will guide the Bidder in completing this section of the proposal.

2. Technical Eligibility and Feasibility Screening

Bidders must use the template provided (Attachment 12) to explain the following:

- Demonstration Project End-User or Host Involvement Clearly Identified.
- Significant Market Potential for the Application Demonstrated.
- Minimum Match Funds.
- Financial Value of Proposed Demonstration Project.
- PIER Funding Qualification and Advancement of the Commercial Transition of EES Technology.

The Commission will not evaluate proposals that fail the technical eligibility and feasibility screening (See Section IV, 25 C).

3. Turn-Key Demonstration Project

Bidders must use the template provided (Attachment 12) to document all the elements of the proposed turn-key demonstration project. The instructions provided in Attachment 12 will guide the Bidder in completing this section of the proposal.

4. Proposed Non-Predefined Application

Bidders must provide a description of the non-predefined application being proposed and complete the information requested in Attachment 12 only if they are proposing a new application that is not one of the predefined applications in Attachment 14.

5. Market Estimate and Benefit

Bidders must provide a definition of the market estimate and benefit based on the information provided in Attachment 14.

6. Commercialization Path

Bidders must provide a brief description of their commercial transition path and the action they feel will make this path credible as described in Attachment 12.

7. Impact and Benefits for California

Bidders must provide the requested information on the impact and benefits to California as described in Attachment 12.

8. Project Manager and Project Team

Bidders must use the template provided (Attachment 12) to document the proposed project manager and project team. The instructions provided in Attachment 12 will guide the Bidder in completing this section of the proposal.

9. Letter from the Servicing Utility

Bidders provided letters as addressed in Attachment 12 to document the servicing utility that supports the grid for that end user or host.

10. Data Acquisition System

Bidders must use the template provided (Attachment 12) to document to define the data acquisition systems and capabilities they propose using for this project.

11. Project Funding

Bidders must use the template provided (Attachment 12) to document the proposed project funding. The instructions provided in Attachment 12 will guide the Bidder in completing this section of the proposal.

12. Project Match Funds

Federal and State of California, including PIER R&D and Renewables, funds cannot be used as match funds under this RFP. Bidders must use the template provided (Attachment 12) to document the proposed project cash match and in-kind match funds. The instructions provided in Attachment 12 will guide the Bidder in completing this section of the proposal.

13. Project Scope of Work

Bidders must use the template provided (Attachment 8, Exhibit A) to document the proposed project scope of work. There are detailed instructions provided in Attachment 8 to facilitate the preparation of this section of the proposal.

14. Schedule of Deliverables & Due Dates, and the Gantt Chart

Complete RFP Attachment 8, Deliverables, Due Dates and Gantt Chart, by following the instructions contained in that attachment.

15. Detailed Budgets

Complete RFP Attachment 9, Budget Information, by following the instructions contained in that attachment.

16. List of Contacts, Key Personnel, and Key Subcontractors

Complete RFP Attachment 10, List of Contacts, Key Personnel, and Key Subcontractors by following the instructions contained in that attachment.

17. Customer References

Complete RFP Attachment 11, Customer References, by following the instructions contained in that attachment.

56. What can I put in Volume 3 – Confidential Information?

Bidders are discouraged from submitting any confidential information regarding their proposed project under this solicitation. Additionally, Commission staff does not believe that confidential information is needed for the evaluation of proposals. However, if the Bidder believes that certain confidential information would be essential for the scoring committee to consider, or would clarify the status of the development of the technology prior to any awarded agreement (i.e., benchmarking for royalty purposes), Bidders may submit such specifically requested and identified confidential information separately in Volume 3. Include at the beginning of this volume the Confidential and Pre-existing Intellectual Property form, RFP Attachment 13.

The Confidential Volume 3 must be packaged and sealed separately from the non-confidential Volumes 1 and 2. Volume 3 must accompany Volumes 1 and 2, must be clearly marked **"Confidential Information for RFP 500-03-501",** and must include the **Bidder's name** and the **project title**. Confidentiality will be determined by the Commission in accordance with the confidentiality regulations contained in Title 20, California Code of Regulations, Sections 2501-2505.

The Commission will not accept or retain any proposals that are submitted entirely in confidence. However, all proposals will be kept confidential until the Notice of Proposed Awards is posted.

RFP Attachment 1

Notice of Intent to Bid

The information you submit on this form is NOT binding. This Notice of Intent to Bid will be held confidential until the Notice of Proposed Awards is posted. Please return this form to the California Energy Commission Contracts Office by the date indicated in the RFP schedule.

1. **Brief Project Title**: _____

2. **Organization Name:** _____

   Address: _____

   _____

3. **Contact Person:** _____ Telephone: _____

   Title: _____ Fax: _____

   E-mail: _____

4. **Application Area**

   ☐ Bulk electricity price arbitrage
   ☐ Transmission and distribution upgrade deferral
   ☐ Transmission and distribution support
   ☐ Time-of-use energy cost management
   ☐ Demand charge management
   ☐ Electric Service Reliability
   ☐ Renewables capacity firming
   ☐ Renewables contractual time-of-production payments
   ☐ Other (please provide name):
   _____

5. **Summary of Demonstration Goals and Approach** (no more than 120 words):

6. **Estimated Project Costs and Length**

   Total PIER Funds Requested $_____ Project length: _____ months

   Total Matching Funds Provided $_____

   Total Project Cost $_____

7. **Team Composition**

   Prime Contractor _____

   Subcontractors _____

   _____

RFP Attachment 2

Application and Project Information Form

This document provides the Commission with basic information about the Bidder and its Key Subcontractors.

- Each Bidder must complete, sign and include this attachment in its proposal.
- Each Key Subcontractor included in the Bidder's proposal must also read and sign Section 14 of this attachment.

1. Bidder Information

Full Legal Name of Bidder _____

Business Address _____
(street number and name) (mail stop/suite number)

_____
(city) (county) (state) (zip code)

Senator District Number: _____ Assemblyperson District Number: _____

Contact Person _____ Title _____

Telephone _____ Fax _____

E-mail _____

2. Project Information

Brief Project Title _____

Project Work Site Location _____

3. Project Abstract (no more than 250 words)

4. Project Technology

Technology Type: _____

5. Project Costs

PIER Funds Requested	$_____
Match Funds (in-kind)	$_____
Match Funds (cash)	$_____
Total	$_____

6. Type of PIER funding being requested (Please check only one.)

Bidders should carefully read this solicitation before checking either of the boxes. If neither box is checked, the Commission will assume that the Bidder is selecting PIER funds with royalty provisions. (Refer to Section I, Introduction, No. 14, Is Repayment or a Royalty Fee Required?, and No. 15, What is the Repayment Exemption?)

☐ PIER funds with royalty provisions

☐ PIER funds without royalty provisions, please provide an explanation below:

7. Type of Entity or Business Organization

Organization Tax ID Number _____

Nature of Business Activity _____

Number of employees _____ Year established _____

How long under current ownership _____ Legal form of organization (check one):

☐ Sole Proprietorship ☐ Corporation ☐ LLC

☐ General Partnership ☐ Sub-Chapter S Corporation

☐ Limited Partnership ☐ Other (describe) _____

If Corporation, please include Articles of Incorporation immediately following this Attachment.
If Partnership, include Partnership Agreement. If Sole Proprietorship, include Fictitious Name Filing.

8. Management and Ownership Information *(Add sheets if necessary.)*

Please list key officers and managers of the bidder organization.

Name	Title	Years with Organization

Please list owners of the bidder organization. For publicly traded corporations, please list shareholders involved in management of the business and/or owning 10% or more of outstanding shares.

Shareholder/Partner (Indicate General or Limited)	% Ownership	SS#

9. Financial/Legal History

If you answer yes to either of these questions, please provide a detailed explanation.

YES	NO	
☐	☐	Has your organization, or you as a sole proprietor, ever filed bankruptcy or defaulted on any debts?
☐	☐	Is your organization, or you as a sole proprietor, a party to any claim or lawsuit?

10. Small Business Preference Claim

Does your organization qualify as a small business under the Federal Self-Certification regulations?

☐ No ☐ Yes Federal Self-Certification

Annual Receipts: $_____ Standard Industrial Classification (SIC) Code: _____

Is your organization certified as a small business by the State of California, or have you applied for certification?

☐ No ☐ Yes State Certification

☐ Already certified _____ (date)

☐ Application submitted to Office of Small Business Certification and Resources _____ (date)

11. Disabled Veteran Business Participation Acknowledgement

I certify that I have read and understand the requirements of DVBE participation and understand my obligations in regard to DVBE. I also understand that failure to meet the requirements of the DVBE program will cause my proposal to be rejected before evaluation.

☐ **YES** ☐ **NO**

12. Proposal Contents

Check to indicate the proposal material you are submitting.

☐ Admin Volume #1 ☐ Technical Volume #2

☐ Confidential Volume #3 (See Sections V and VI of the RFP.) ☐ CD Rom or Zip Diskette

13. Authorization and Certification

I hereby authorize the California Energy Commission to make any inquiries necessary to verify the information I have presented and obtain any financial information necessary to evaluate my organization's capability to supply the necessary financial support to the proposed project.

I hereby certify to the best of my knowledge and belief that I have read, understand, and do hereby accept the terms and conditions contained in this RFP package, including the provisions of Attachment 7, Agreement Terms and Conditions and, further, I am willing to enter into an agreement with the Commission to conduct the proposed project according to the terms and conditions offered.

I hereby certify to the best of my knowledge that the information contained in this proposal is correct and complete.

_____

Signature of Authorized Representative Date

_____

Typed Name Title

14. Key Subcontractor Authorization and Certification

I hereby authorize the California Energy Commission to make any inquiries necessary to verify the information I have presented and obtain any financial information necessary to evaluate my organization's capability to supply the necessary financial support to the proposed project.

I hereby certify to the best of my knowledge and belief that I have read, understand, and do hereby accept the terms and conditions contained in this RFP package, including the flowdown provisions of Attachment 7, Agreement Terms and Conditions and, further, I am willing to enter into an agreement with the Bidder to conduct the proposed project according to the terms and conditions offered.

Key Subcontractor #1

_____

Signature of Authorized Representative Date

_____

Typed Name Title

Key Subcontractor #2

_____

Signature of Authorized Representative Date

_____

Typed Name Title

Key Subcontractor #3

_____

Signature of Authorized Representative Date

_____

Typed Name Title

(Use additional sheets as necessary)

RFP Attachment 3

CERTIFICATION CLAUSES

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that I am duly authorized to legally bind the prospective Contractor to the clause(s) listed below. This certification is made under the laws of the State of California.

Contractor/Bidder Firm Name (Printed)	*Federal ID Number*
By (Authorized Signature)	
Printed Name and Title of Person Signing	
Date Executed	*Executed in the County of*

CONTRACTOR CERTIFICATION CLAUSES

1. STATEMENT OF COMPLIANCE: Contractor has, unless exempted, complied with the nondiscrimination program requirements. (GC 12990 (a-f) and CCR, Title 2, Section 8103) (Not applicable to public entities.)

2. DRUG-FREE WORKPLACE REQUIREMENTS: Contractor will comply with the requirements of the Drug-Free Workplace Act of 1990 and will provide a drug-free workplace by taking the following actions:

a. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations.

b. Establish a Drug-Free Awareness Program to inform employees about:

1) the dangers of drug abuse in the workplace;

2) the person's or organization's policy of maintaining a drug-free workplace;
3) any available counseling, rehabilitation and employee assistance programs; and,
4) penalties that may be imposed upon employees for drug abuse violations.

c. Every employee who works on the proposed Agreement will:

1) receive a copy of the company's drug-free workplace policy statement; and,

2) agree to abide by the terms of the company's statement as a condition of employment on theAgreement.

Failure to comply with these requirements may result in suspension of payments under the Agreement or termination of the Agreement or both and Contractor may be ineligible for award of any future State agreements if the department determines that any of the following has occurred: (1) the Contractor has made false certification, or violated the certification by failing to carry out the requirements as noted above. (GC 8350 et seq.)

3. NATIONAL LABOR RELATIONS BOARD CERTIFICATION: Contractor certifies that no more than one (1) final unappealable finding of contempt of court by a Federal court has been issued against Contractor within the immediately preceding two-year period because of Contractor's failure to comply with an order of a Federal court which orders Contractor to comply with an order of the National Labor Relations Board. (PCC 10296) (Not applicable to public entities.)

4. UNION ORGANIZING Contractor hereby certifies that no request for reimbursement, or payment under this agreement, will seek reimbursement for costs incurred to assist, promote or deter union organizing.

DOING BUSINESS WITH THE STATE OF CALIFORNIA
The following laws apply to persons or entities doing business with the State of California.

1. CONFLICT OF INTEREST: Contractor needs to be aware of the following provisions regarding current or former state employees. If Contractor has any questions on the status of any person rendering services or involved with the Agreement, the awarding agency must be contacted immediately for clarification.

Current State Employees (PCC 10410):

1). No officer or employee shall engage in any employment, activity or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any state agency, unless the employment, activity or enterprise is required as a condition of regular state employment.

2). No officer or employee shall contract on his or her own behalf as an independent contractor with any state agency to provide goods or services.

Former State Employees (PCC 10411):

1). For the two-year period from the date he or she left state employment, no former state officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements or any part of the decision-making process relevant to the contract while employed in any capacity by any state agency.

2). For the twelve-month period from the date he or she left state employment, no former state officer or employee may enter into a contract with any state agency if he or she was employed by that state agency in a policy-making position in the same general subject area as the proposed contract within the 12-month period prior to his or her leaving state service.

If Contractor violates any provisions of above paragraphs, such action by Contractor shall render this Agreement void. (PCC 10420)

Members of boards and commissions are exempt from this section if they do not receive payment other than payment of each meeting of the board or commission, payment for preparatory time and payment for per diem. (PCC 10430 (e))

2. LABOR CODE/WORKERS' COMPENSATION: Contractor needs to be aware of the provisions which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions, and Contractor affirms to comply with such provisions before commencing the performance of the work of this Agreement. (Labor Code Section 3700)

3. AMERICANS WITH DISABILITIES ACT: Contractor assures the State that it complies with the Americans with Disabilities Act (ADA) of 1990, which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA. (42 U.S.C. 12101 et seq.)

4. CONTRACTOR NAME CHANGE: An amendment is required to change the Contractor's name as listed on this Agreement. Upon receipt of legal documentation of the name change the State will process the amendment. Payment of invoices presented with a new name cannot be paid prior to approval of said amendment.

5. CORPORATE QUALIFICATIONS TO DO BUSINESS IN CALIFORNIA:

a. When agreements are to be performed in the state by corporations, the contracting agencies will be verifying that the contractor is currently qualified to do business in California in order to ensure that all obligations due to the state are fulfilled.

b. "Doing business" is defined in R&TC Section 23101 as actively engaging in any transaction for the purpose of financial or pecuniary gain or profit. Although there are some statutory exceptions to taxation, rarely will a corporate contractor performing within the state not be subject to the franchise tax.

c. Both domestic and foreign corporations (those incorporated outside of California) must be in good standing in order to be qualified to do business in California. Agencies will determine whether a corporation is in good standing by calling the Office of the Secretary of State.

6. RESOLUTION: A county, city, district, or other local public body must provide the State with a copy of a resolution, order, motion, or ordinance of the local governing body which by law has authority to enter into an agreement, authorizing execution of the agreement.

7. AIR OR WATER POLLUTION VIOLATION: Under the State laws, the Contractor shall not be*:* (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board or an air pollution control district; (2) subject to cease and desist order not subject to review issued pursuant to Section 13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of federal law relating to air or water pollution.

8. PAYEE DATA RECORD FORM STD. 204: This form must be completed by all contractors that are not another state agency or other government entity.

RFP ATTACHMENT 4.1

STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION
Contracts Office

PRIME BIDDER'S CERTIFICATION OF
DISABLED VETERAN-OWNED BUSINESS PARTICIPATION

See Instructions on Reverse

I hereby certify that I have made a diligent effort to ascertain the facts with regard to the representations made herein and, to the best of my knowledge and belief, each firm set forth in this bid as a disabled veteran business enterprise complies with the relevant definition set forth in Section 1896.62(d) of Title 2, California Code of Regulations hereof.

In making this certification, I am aware of Section 12650 et seq. of the Government Code providing for the imposition of treble damages for making false claims against the State, and Section 10115.10 of the Public Contract Code making it a crime for intentionally making an untrue statement in this certificate.

COMPANY NAME/BIDDER (Please type or print)	RFP #
BIDDER'S SIGNATURE	DATE SIGNED
PRINTED NAME OF PERSON SIGNING	TITLE OF PERSON SIGNING (Business Owner/Chief Executive Officer)

NOTE: *If DVBE participation is proposed, this form must be completed and signed by the bidder or the proposal will be rejected.*

Bidder's Certification of DVBE Participation - Attachment 4.1

If the bidder is proposing to meet the DBVE participation goal, the bidder must sign a certification that each firm listed on Attachment 4.2 meets the legal definition of DVBE and the bidder is aware of the penalties for fraud.

- Company Name - legal company name of prime bidder.
- Bidder's Signature - person authorized (CEO) to sign.
- Printed Name - printed name of person who signed.
- Title - title of person signing - Business Owner, Chief Executive Officer, Manager.

Only the company (bidder) submitting the proposal must sign this certification.

STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION
Contracts Office

LIST OF DISABLED VETERAN OWNED BUSINESS PARTICIPATION

(1) Company Name	(2) Nature of Work	(3) Contracting With	(4) TIER	(5) Claimed DVBE Value %	(6) Certification Letter from OSMB Attached
TOTAL				%	

NOTE: ***If proposing participation goals,*** *this form must be completed or your proposal will be rejected. See instructions on reverse of this form of the RFP.*

ATTACHMENT 4.2
RFP 500-02-501

DVBE Participation List – Attachment 4.2

If the participation goals are partially or fully met, Attachment 4.2 must be completed detailing the type of work, the companies (subcontractors and vendors) proposed for DVBE participation, and all other related information.

Col. l - DVBE company name - each DVBE company must be certified by or have submitted Attachment 4 (application for DVBE certification) to OSBCR by the proposal due date.

Col. 2 - Nature of Work - Type of Expertise, Technology, Service, Supplier, etc.

Col. 3 - Contracting with - Company name that the DVBE company is contracting with. For example, the bidder may be contracting with a company (XYZ, Inc.) who deals with a DVBE. Then XYZ, Inc. would be entered in Column 3.

Col. 4 - Tier - Contracting tier according to the following:

0 = Bidder;
1 = Primary subcontractor/supplier;
2 = Subcontractor/supplier of Level 1 subcontractor/ supplier;
3 = Subcontractor/supplier of Level 2 subcontractor/ supplier.

Col. 5 - Claimed DVBE, % value.

Percent of contract dollars committed to the DVBE listed. This percentage is the amount that will be paid to each DVBE company/vendor from the contract funds.

NOTE: This percentage is not the ownership of the company.

Col. 6 - Certification Letter attached.

This column is a checkpoint for you to ensure that all of the DVBE certification letters are in your proposal. If a certification letter is omitted, that DVBE company cannot be counted towards meeting the goals.

DVBE certification approval letter or a copy of the DVBE Application must be included in the proposal. DVBEs must be certified by the time of contract award in order to count in the participation goals.

You must clearly identify in the Work Statement, Tasks & Budget what services will be provided and the costs related to each DVBE.

STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION
Contracts Office

DOCUMENTATION OF GOOD FAITH EFFORTS

Section 1. ORGANIZATION CONTACTS

List below the contacts made in an effort to identify potential DVBEs for participation in this contract. Include dates, times (if known), contact names and phone numbers.

Agency	Name	Phone	Date/Time
A. CA Energy Commission		(916) 654-4392	
B. Other State Agencies			
C. DVBE Organizations			

Section 2. ADVERTISING

List the trade papers and DVBE focused papers in which you advertised for participation in this contract. Include the dates of advertisement.

Trade	Ad Date	Publication Name	Copy Attached

NOTE: *If your proposal does not meet the 3% disabled veteran participation goal, this form must be completed to meet "Good Faith Efforts." These are the minimum requirements, therefore failure to fully complete <u>each</u> section of this form will result in rejection of the proposal as nonresponsive.*

Section 3. DVBEs CONSIDERED

A. Attach Solicitation Sample or Phone Conversation.
B. List DVBEs that you contacted for participation in this contract along with the dates you sent the solicitations or called them.
C. List DVBEs that you considered for participation in this contract and state the reasons the DVBEs were not selected.

Date Contacted	Name of Company	Nature of Work	Reason Considered But Not Selected	Date

NOTE: *If your proposal does not meet the 3% disabled veteran participation goal, this form must be completed to meet "Good Faith Efforts." These are the minimum requirements, therefore failure to fully complete <u>each</u> section of this form will result in rejection of the proposal as nonresponsive.*

ATTACHMENT 4.3 (CONTINUED)
INSTRUCTIONS FOR ATTACHMENT 4.3
DOCUMENTATION OF GOOD FAITH EFFORTS

If a bidder's proposal does not meet the participation goals, then the bidder must document its "good faith effort" to meet the participation goals. The minimum requirements for meeting good faith documentation under the law are CONTAINED in Attachment 4.3, therefore each item in Attachment 4.3 must be accomplished and documented. (Public Contract Code Part 10115.2) **IF THE PROPOSAL DOES NOT MEET THE 3% DVBE PARTICIPATION THEN, FAILURE TO PERFORM, COMPLETE AND SUBMIT ATTACHMENT 4.3 WILL BE CAUSE FOR REJECTION OF THE FINAL PROPOSAL AS NONRESPONSIVE TO THE GOOD FAITH EFFORTS REQUIREMENT.**

Information is available at:

DGS-DVBE Resources Packet – www.pd.dgs.ca.gov, (select "DVBE Program" under the "Quicklist". Or call the receptionist at (916)-375-4940

Part 1 - ORGANIZATION CONTACTS

List each contact by date, time, name, and phone number. Each bidder is required at a minimum to undertake steps A, B, and C and to document all efforts under each step. [Public Contract Code Part 10115.2 (b)]. *The purpose of making each of these contacts is to obtain the resources/contact groups who can refer you to or provide you with lists of DVBEs.*

The DVBE list available from DGS consists of commodities and services (including consultant services).

Part 2 - ADVERTISING

Advertising is required as part of the good faith effort documentation.

- Advertising must be made in at least two publications: one trade (e.g., work being performed in the project and reimbursed by the Commission) and one DVBE focused.
- Both advertisements must appear not less than 14 calendar days prior to bid proposal submittal date, to allow reasonable time for consideration of DVBEs.
- The advertisements for DVBE (including names of publications, dates of advertisement and copies of advertisements) must be documented in the bidder's proposal.

NOTE: *General circulation newspapers such as the Los Angeles Times or the Sacramento Bee are not acceptable, since neither one qualifies as a trade or focus publication.*

Part 3 - DVBE'S RESPONDING AND CONSIDERED

List and identify each DVBE that was contacted and state the reason why they were not selected. DVBE businesses considered must have appropriate qualifications for the work to be performed in the project.

DVBE participation is not limited to any specific portion of the project work. Participation may be from technical firms, but it may also come from nontechnical firms that are part of your daily business operations such as travel agencies, stationary supplies, delivery companies, etc.

NOTE: T*he bidder must make actual contact with DVBEs. Services provided by DVBEs must be a reimbursable item under the project.*

SMALL BUSINESS AND DVBE CERTIFICATION INSTRUCTIONS

The OSBDOE address and phone for Small Business Preference and DVBE information is:

Department Of General Services
Office of Small Business Certification and Resources
707 W. Third Street, 2nd Floor
West Sacramento, CA 95605
Phone No.: (916) 375-4940

Small Business Certification

In order to receive Small Business Preference, Bidder must either be certified by the State Department of General Services, Office of Small Business Certification and Resources (OSBCR) as a small business, or be self-certified pursuant to the Federal Government.

DVBE Certification

- Each DVBE firm listed on Attachment 4.2 must be formally certified as a DVBE by OSBCR. The DVBE program is not a self-certification program. DVBE certification must be approved by OSBCR by the notice of award date of the contract to be counted in meeting participation goals.

- A copy of the certification letter approved by, or a copy of the certification form submitted to OSBCR must be included in the proposal package.

To qualify as a DVBE, the DVBE must:

1) Be a California resident;
2) Own 51% of the firm and meet the requirements: in 3) and 4) below.
3) Provide to the OSBCR, by no later than 5:00 p.m. on the date on which the proposal is due, an Award of Entitlement from the United States Department of Veterans Affairs or the United States Department of Defense, issued within 6 months of the date on which certification is sought, which would certify or declare the existence of a service-connected disability, of at least 10 percent, at the time of application for or renewal of certification as a DVBE, and
4) Meet all requirements set forth in Article 6 (commencing with Section 999) of Chapter 6, Division 4 of the California Military code.

The Internet addresses are:

OSBCR Homepage: http://www.dgs.ca.gov/osbcr

This internet site provides general information about the DVBE program and certification process.

DVBE list: http://www.dgs.ca.gov/osbcr

OSBCR maintains a list of certified DVBEs. The list is separated into three main subject areas: Commodities, Construction, and Services. Within each subject area, there are more specific areas of expertise. The Energy Commission does not have separate DVBE lists.

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STATE OF CALIFORNIA

TARGET AREA CONTRACT PREFERENCE ACT (TACPA) REQUEST

STD 830 (NEW. 5-99)

See reverse for program description and instructions for completing this form.

SECTION 1: SOLICITATION INFORMATION

BID NUMBER
AGENCY/DEPT.

This request form should be completed by bidders wishing to apply for TACPA preferences for this solicitation.

SECTION 2: REQUEST FOR 5% WORKSITE PREFERENCE

List the bidding firm and **all** *suppliers and subcontractors who will work with the bidder to fulfil the terms of the contract. Indicate those firms for which the bidder is requesting worksite preference eligibility by providing the requested information. Attach additional pages if needed.*

NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
NAME OF FIRM	FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*				Complete if requesting Worksite Preference:		
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	BLOCK NUMBER	TRACT NUMBER	CRITERIA (A - F)
			TOTAL LABOR HOURS ESTIMATED	0.0			

SECTION 3: REQUEST FOR 1% - 4% WORKFORCE PREFERENCE

- ☐ I request a 1% preference for hiring eligible persons to perform 5 - 9.99% of the total contract labor hours
- ☐ I request a 2% preference for hiring eligible persons to perform 10 - 14.99% of the total contract labor hours
- ☐ I request a 3% preference for hiring eligible persons to perform 15 - 19.99% of the total contract labor hours
- ☐ I request a 4% preference for hiring eligible persons to perform 20% or more of the total contract labor hours

SECTION 4: CERTIFICATION

I hereby certify under penalty of perjury, that (1) the bidder is a California based company as defined in the TACPA regulations, (2) at least 50% of the labor hours required to manufacture the goods and to perform a contract for goods, or 90% of the labor hours required to perform a contract for services shall be performed at the eligible distressed area worksite(s) claimed in Section 2, (3) if applying for workforce preference, the bidder shall hire persons with a high risk of unemployment to perform the required contract labor hours as requested in Section 3, and (4) all information provided in this request is true, correct, and complete. Any person falsely certifying, willfully providing false information, omitting information, or failing to comply with the TACPA statute is subject to penalties, fines and possible loss of State contacting eligibility.

BIDDER'S SIGNATURE		PRINTED OR TYPED NAME
TITLE	AREA CODE & PHONE NUMBER	DATE EXECUTED

STATE OF CALIFORNIA

TARGET AREA CONTRACT PREFERENCE ACT (TACPA) REQUEST

STD 830 (NEW. 5-99)

Program Description

The intent of the Target Area Contract Preference Act (TACPA) is to promote economic development and employment opportunities in distressed areas of the state by offering bidding preferences on qualified solicitations.

TACPA provides for two preferences: Worksite and Workforce.

Worksite Preference: Bidders may be eligible for a 5% bid preference on state goods and services contracts valued at more than $100,000 if the worksite is located in a distressed area as designated by the State Office of Planning and Research.

TACPA allows state contracting officials to award the worksite preference when 50% of the labor hours required to manufacture the goods and to perform a contract for goods, or 90% of the labor hours required to perform a contract for services is performed at the approved worksites.

Workforce Preference: Companies qualifying for the 5% worksite preference may request an additional 1% - 4% workforce preference by certifying to hire a specified percent of their contract workforce from employees who are at high risk of unemployment as defined in California Government Code, Section 4532(f).

To request workforce preference, the bidder must first identify an eligible worksite.

TACPA bid preferences do not apply to contracts in which the worksite is fixed.

For more detail, see California Government Code, Section 4530 et seq. and California Code of Regulations, Title 2, Section 1896.30.

Other Bidding Preference Programs

In addition to TACPA, the State has other bidding preference programs for which you might qualify:

EZA - Enterprise Zone Act (up to a 9% bidding preference)

LAMBRA - Local Agency Military Base Recovery Area Act (up to a 9% bidding preference)

Small Business - Certified small businesses in California can receive a 5% bidding preference.

A non-certified small business that claims any combination of EZA, TACPA or LAMBRA preferences cannot use these preferences to displace a certified small business.

How the Bidding Preference Works

The TACPA bidding preference that you qualify for is used only for bid solicitation purposes, to a maximum of $50,000. The preference does not alter the amount of the resulting contract.

If you qualify for more than one bidding preference (EZA, TACPA, LAMBRA, Small Business) the maximum preference allowed by law is 15% or $100,000.

Reporting Requirements

Firms receiving TACPA preferences must report their labor hours. Reference the state contract on which you are bidding for specific reporting requirements.

How to Identify TACPA Locations

Contact the appropriate city or county planning and development office or your local Area Council of Governments and ask for the Census Tract and Block Group numbers for the firm or firms for which you are requesting worksite preference.

Then, contact the State of California, Department of General Services, Office of Small Business Certification and Resources at (916) 323-5478 and ask for the TACPA coordinator. The coordinator will tell you if the worksite is eligible.

Instructions for completing "Target Area Contact Preferences Act (TACPA) Request" on Reverse

Section 1: Enter the solicitation number and the name of the state department or agency offering the solicitation.

Section 2: Enter the requested information for 1) the bidding firm, and 2) all firms with whom the bidder will be subcontracting to perform the work required to complete this bid. You must list all firms, including the manufacturer, if applicable, not just those requesting worksite preference.

Firm's role in this bid: Enter the appropriate description indicating what job the listed firm will perform.

Tract and Block Numbers: See instructions above on how to obtain tract and block numbers.

Labor Hours Estimated: For each firm listed, estimate the total labor hours to be performed. Total the estimated hours for each firm and enter them into the box labeled "Total Labor Hours Estimated"

Criteria:

A: The firm is located in a California eligible distressed area.

B: The firm will establish a worksite in a California eligible distressed area.

C: MAP REQUIRED. The firm is located in a census tract block that, when attached to an eligible distressed area, forms a contiguous boundary. If you enter "C", you must attach a map showing the relationship of the requested area to the distressed area.

D: MAP REQUIRED. The firm will establish a worksite located in a census tract block that, when attached to an eligible distressed area, forms a contiguous boundary. If you enter "D", you must attach a map showing the relationship of the requested area to the distressed area.

E: GOODS ONLY. The firm will purchase the contract goods from a manufacturer located in an eligible distressed area.

F: GOODS ONLY/MAP REQUIRED. The firm will purchase contract goods from a manufacturer located in a census tract block that, when attached to a distressed area, forms a contiguous boundary. If you enter "F", you must attach map showing the relationship of the requested area to the distressed area.

Section 3: Select the appropriate box, indicating the percentage of workforce preference you are requesting. To request workforce preference, the bidder must first identify an eligible worksite.

Section 4: The Bidder must complete and sign the Certification.

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STATE OF CALIFORNIA

ENTERPRISE ZONE ACT (EZA) PREFERENCE REQUEST

STD 831 (NEW. 5-99)

See reverse for program description and instructions for completing this form.

SECTION 1: SOLICITATION INFORMATION

BID NUMBER
AGENCY/DEPT.

This request form should be completed by bidders wishing to apply for EZA preferences for this solicitation.

SECTION 2: REQUEST FOR 5% WORKSITE PREFERENCE

*List the bidding firm and **all** suppliers and subcontractors who will work with the bidder to fulfil the terms of the contract. Indicate those firms for which the bidder is requesting worksite preference eligibility by providing the requested information. Attach additional pages if needed.*

NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			Complete if requesting Worksite Preference:	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	ENTERPRISE ZONE NAME	CRITERIA (A - C)
			TOTAL LABOR HOURS ESTIMATED	0.0		

SECTION 3: REQUEST FOR 1% - 4% WORKFORCE PREFERENCE

- ☐ I request a 1% preference for hiring eligible persons to perform 5 - 9.99% of the total contract labor hours
- ☐ I request a 2% preference for hiring eligible persons to perform 10 - 14.99% of the total contract labor hours
- ☐ I request a 3% preference for hiring eligible persons to perform 15 - 19.99% of the total contract labor hours
- ☐ I request a 4% preference for hiring eligible persons to perform 20% or more of the total contract labor hours

SECTION 4: CERTIFICATION

I hereby certify under penalty of perjury, that (1) the bidder is a California based company as defined in the EZA regulations, (2) at least 50% of the labor hours required to manufacture the goods and to perform a contract for goods, or 90% of the labor hours required to perform a contract for services shall be performed at the designated enterprise zone worksite(s) claimed in Section 2, (3) if applying for workforce preference, the bidder shall hire persons living in a targeted employment area or who are enterprise zone eligible employees to perform the specified percent of total contract labor hours as requested in Section 3, and (4) all information provided in this request is true, correct, and complete. Any person falsely certifying, willfully providing false information, omitting information, or failing to comply with the EZA statute is subject to penalties, fines and possible loss of State contacting eligibility.

BIDDER'S SIGNATURE		PRINTED OR TYPED NAME
TITLE	AREA CODE & PHONE NUMBER	DATE EXECUTED

STATE OF CALIFORNIA

ENTERPRISE ZONE ACT (EZA) PREFERENCE REQUEST

STD 831 (NEW. 5-99)

Program Description

The intent of the Enterprise Zone Act (EZA) is to promote economic development and employment opportunities in designated enterprise zones by offering bidding preferences on qualified solicitations.

EZA provides for two preferences: Worksite and Workforce.

Worksite Preference: Bidders may be eligible for a 5% bid preference on state goods and services contracts valued at more than $100,000 if the worksite is located in an enterprise zone as designated by the State Trade and Commerce Agency.

EZA allows state contracting officials to award the bid worksite preference when 50% of the labor hours required to manufacture the goods and to perform a contract for goods, or 90% of the labor hours required to perform a contract for services is performed at the approved worksites.

Workforce Preference: Companies qualifying for the 5% worksite preference may request an additional 1% - 4% workforce preference by certifying to hire a specified percent of their contract workforce employees from a targeted employment area, or from enterprise zone eligible employees.

To request workforce preference, the bidder must first identify an eligible worksite.

EZA bid preferences do not apply to contracts in which the worksite is fixed.

For more detail, see California Government Code, Title 1, Division 5, Chapter 12.8, Section 707 et seq. and California Code of Regulations, Title 2, Section 1896.100.

Other Bidding Preference Programs

In addition to EZA, the State has other bidding preference programs for which you might qualify:

TACPA - Target Area Contract Preference Act (up to a 9% bidding preference)
LAMBRA - Local Agency Military Base Recovery Area Act (up to a 9% bidding preference)
Small Business - Certified small businesses in California can receive a 5% bidding preference.

A non-certified small business that claims any combination of EZA, TACPA or LAMBRA preferences cannot use these preferences to displace a certified small business.

How the Bidding Preference Works

The EZA bidding preference that you qualify for is used only for bid solicitation purposes, to a maximum of $50,000. The preference does not alter the amount of the resulting contract.

If you qualify for more than one bidding preference (EZA, TACPA, LAMBRA, Small Business) the maximum preference allowed by law is 15% or $100,000.

Reporting Requirements

Firms receiving EZA preferences must report their labor hours. Reference the state contract on which you are bidding for specific reporting requirements.

How to Identify Enterprise Zone Locations

Contact the city or county economic development office or the State Trade and Commerce Agency at (916) 324-8211.

Instructions for completing "Enterprise Zone Act Preference Request" on Reverse

Section 1: Enter the solicitation number and the name of the state department or agency offering the solicitation.

Section 2: Enter the requested information for 1) the bidding firm, and 2) all firms with whom the bidder will be subcontracting to perform the work required to complete this bid. You must list all firms, including the manufacturer, if applicable, not just those requesting worksite preference.

Firm's role in this bid: Enter the appropriate description indicating what job the listed firm will perform.

Enterprise Zone Name: See instructions above on "How to Identify Enterprise Zone Locations."

Labor Hours Estimated: For each firm listed, estimate the total labor hours to be performed. Total the estimated hours for each firm and enter them into the box labeled "Total Labor Hours Estimated."

Criteria:

A: The firm is located in a California designated enterprise zone

B: The firm will establish a worksite in a California designated enterprise zone.

C: GOODS ONLY. The firm will purchase the contract goods from the manufacturer(s) located in a California designated enterprise zone.

Section 3: Select the appropriate box, indicating the percentage of workforce preference you are requesting. To request workforce preference, the bidder must first identify an eligible worksite.

Section 4: The Bidder must complete and sign the Certification.

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STATE OF CALIFORNIA

LOCAL AGENCY MILITARY BASE RECOVERY AREA (LAMBRA) PREFERENCE REQUEST

STD 832 (NEW. 5-99)

See reverse for program description and instructions for completing this form.

SECTION 1: SOLICITATION INFORMATION

BID NUMBER	
AGENCY/DEPT.	

This request form should be completed by bidders wishing to apply for LAMBRA preferences for this solicitation.

SECTION 2: REQUEST FOR 5% WORKSITE PREFERENCE

List the bidding firm and **all** *suppliers and subcontractors who will work with the bidder to fulfill the terms of the contract. Indicate those firms for which the Bidder is requesting worksite preference eligibility by providing the requested information. Attach additional pages if needed.*

NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
NAME OF FIRM		FIRM'S ROLE IN THIS BID *(Examples: Bidder, Manufacturer, Shipper, etc.)*			**Complete if requesting Worksite Preference:**	
STREET ADDRESS	CITY	STATE	ZIP CODE	LABOR HOURS ESTIMATED	MILITARY BASE RECOVERY AREA NAME	Criteria (A - C)
			TOTAL LABOR HOURS ESTIMATED	0.0		

SECTION 3: REQUEST FOR 1% - 4% WORKFORCE PREFERENCE

- ☐ I request a 1% preference for hiring eligible persons to perform 5 - 9.99% of the total contract labor hours
- ☐ I request a 2% preference for hiring eligible persons to perform 10 - 14.99% of the total contract labor hours
- ☐ I request a 3% preference for hiring eligible persons to perform 15 - 19.99% of the total contract labor hours
- ☐ I request a 4% preference for hiring eligible persons to perform 20% or more of the total contract labor hours

SECTION 4: CERTIFICATION

I hereby certify under penalty of perjury, that (1) the bidder is a California based company as defined in the LAMBRA regulations, (2) at least 50% of the labor hours required to perform a contract for goods, or 100% of the labor hours required to perform a contract for services shall be performed at the designated Local Agency Military Base Recovery Area(s) claimed in Section 2, (3) if applying for workforce preference, the bidder shall hire persons living within a Local Agency Military Base Recovery Area to perform the specified percent of total contract labor hours as requested in Section 3, and (4) all information provided in this request is true, correct, and complete. Any person falsely certifying, willfully providing false information, omitting information, or failing to comply with the EZA statute is subject to penalties, fines and possible loss of State contacting eligibility.

BIDDER'S SIGNATURE		PRINTED OR TYPED NAME
TITLE	AREA CODE & PHONE NUMBER	DATE EXECUTED

STATE OF CALIFORNIA

LOCAL AGENCY MILITARY BASE RECOVERY AREA (LAMBRA) PREFERENCE REQUEST

STD 832 (NEW. 5-99)

Program Description

The intent of the Local Agency Military Base Recovery Area (LAMBRA) Act is to promote economic development and employment opportunities in designated LAMBRAS by offering bidding preferences on qualified solicitations.

The LAMBRA Act provides for two preferences: Worksite and Workforce.

Worksite Preference: Bidders may be eligible for a 5% bid preference on state goods and services valued at more than $100,000 if the worksite is located in a LAMBRA as designated by the State Trade and Commerce Agency.

LAMBRA allows state contracting officials to award the bid worksite preference when 50% of the labor hours required to perform a contract for goods, or 100% of the labor hours required to perform a contract for services is performed at the approved worksites.

Workforce Preference: Companies qualifying for the 5% worksite preference may request an additional 1% - 4% workforce preference by certifying to hire a specified percent of their contract workforce employees from those designated as LAMBRA qualified individuals. (See Assembly Bill 3: Chapter 1012, 9/30/98).

To request workforce preference, the bidder must first identify an eligible worksite.

LAMBRA bid preferences do not apply to contracts in which the worksite is fixed.

For more detail, see California Government Code, Section 7118 et seq., and California Code of Regulations, Title 2, Section 1896.100. et seq.

Other Bidding Preference Programs

In addition to the LAMBRA Act, the State has other bidding preference programs for which you might qualify:

TACPA - Target Area Contract Preference Act (up to a 9% bidding preference)

EZA -Enterprise Zone Act (up to 9% bidding preference)

Small Business - Certified small businesses in California can receive a 5% bidding preference.

A non-certified small business that claims any combination of EZA, TACPA or LAMBRA preferences cannot use these preferences to displace a certified small business.

How the Bidding Preference Works

The LAMBRA bidding preference that you qualify for is used only for bid solicitation purposes, to a maximum of $50,000. The preference does not alter the amount of the resulting contract.

If you qualify for more than one bidding preference (EZA, TACPA, LAMBRA, Small Business) the maximum preference allowed by law is 15% or $100,000.

Reporting Requirements

Firms receiving LAMBRA preferences must report their labor hours. Reference the state contract on which you are bidding for specific reporting requirements.

How to Identify LAMBRA Locations

Contact the State Trade and Commerce Agency at (916) 324-8211.

Instructions for completing "LAMBRA" Preference Request on Reverse

Section 1: Enter the solicitation number and the name of the state department or agency offering the solicitation.

Section 2: Enter the requested information for 1) the bidding firm, and 2) all firms with whom the bidder will be subcontracting to perform the work required to complete this bid. You must list all firms, including the manufacturer, if applicable, not just those requesting worksite preference.

Firm's role in this bid: Enter the appropriate description indicating what job the listed firm will perform.

Military Base Recovery Area Name: See instructions above on "How to Identify LAMBRA Locations."

Labor Hours Estimated: For each firm listed, estimate the total labor hours to be performed. Total the estimated hours for each firm and enter them into the box labeled "Total Labor Hours Estimated."

Criteria:

A: The firm is located in a California designated LAMBRA.

B: The firm will establish a worksite in a California designated LAMBRA.

C: GOODS ONLY. The firm will purchase the contract goods from the manufacturer(s) located in a LAMBRA.

Section 3: Select the appropriate box, indicating the percentage of workforce preference you are requesting. To request workforce preference, the bidder must first identify an eligible worksite.

Section 4: The Bidder must complete and sign the Certification.

Bidder Name:	*Proposal Number:_____*
Project Title:	

RFP Attachment 6

Executive Summary Form

Prepare an Executive Summary of the project (no longer than two [2] pages), that describes:

1. The overall goals and objectives of the project that make the proposed turnkey, grid connected applications of EES demonstration project high value to California and (by extension) the Nation.

2. A brief overview of the proposed application, demonstration technology and site application.

3. A brief overview of the proposed quantitative market or markets the technology and product will serve and the expected level of market acceptance.

4. The advancement towards the commercialization of this EES technology this demonstration project will provide.

5. The expected quantitative benefits to California electricity ratepayers the demonstration project and the resulting quantitative benefits that full commercial acceptance of the technology and new products will provide.

6. List key subcontractors with their areas of responsibility.

7. List key team members with their areas of responsibility.

8. The overall project cost, the amount of PIER funding being requested, and the amount, sources and nature of match funds. Distinguish the amount of in-kind and cash match funds (the minimum acceptable amount of cash match funds is 20%).

PIER PROJECT TERMS & CONDITIONS

1. CONTRACT CONTENTS

This contract consists of the paragraphs listed below and attached exhibits which are hereby expressly incorporated herein.

2. CONTRACT PURPOSE

The purpose of this contract is to fund research, development and demonstration projects under the Energy Commission Public Interest Energy Research (PIER) Program. The contract will «description». Specific tasks are detailed in the attached Exhibit A, "Work Statement."

3. CONTRACT TERM

The term of this contract shall be from *(term)*. This contract is of no force or effect until signed by both parties, and approved by the Department of General Services.

4. DEFINITIONS

A. ***Affiliate of the Contractor*** means any natural person, corporation, partnership, joint venture, sole proprietorship or other business entity directly or indirectly through one or more intermediaries, controlling, controlled by, or under common control with the Contractor. The term "control" (including the terms "controlled by" and "under common control with") means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a person, whether through the ownership of voting securities, by contract, or otherwise. For purposes of this contract, it is presumed that ownership or control of the voting power of more than fifty percent (50%) of the voting stock or partnership interests in an entity constitutes control of that entity.

B. ***Contract Budget*** refers to Commission reimbursable and Contractor's matching fund expenditures for that portion of the project covered by the contract.

C. ***Contract Period*** is the length of this contract between the Energy Commission and the Contractor. The Contractor's "project" may coincide with or extend outside the "contract period."

D. ***Date*** means calendar date.

E. ***Contract Start Date*** is the date Commission reimbursable expenses can begin after the Department of General Services signs the contract document.

F. ***Contract End Date*** is the last date Commission reimbursable expenses can be incurred and is the expiration date of the contract.

G. ***Economic Benefit*** for a project co-funded using Energy Commission funds means the realization of economic gain or other tangible benefits by the Contractor or its affiliates (except bona fide third party purchasers of Contractor's commercial products) through the use of project-related products and rights, including but not limited to, operation, sale, distribution or manufacturing, or by any other transaction, including but not limited to, grant, rent, loan, equity, option, transfer, license or other fee, or by otherwise disposing of the project-related products and rights.

H. The Commission may rely upon professional accounting opinion in making a final determination of the dollar value of gross revenue, and such determination shall be the basis for calculating the royalty payment due the Commission.

I. ***Equipment*** is defined as having a useful life of at least one year, having an acquisition unit cost of at least $5,000, and purchased with Commission funds. ***Equipment*** means any products, objects, machinery, apparatus, implements or tools purchased, used or constructed within the project, including those products, objects, machinery, apparatus, implements or tools from which over thirty percent (30%) of the equipment is composed of materials purchased for the project.

J. For purposes of determining depreciated value of equipment used in the contract, the project shall terminate at the end of the normal useful life of the equipment purchased, funded and/or developed with Commission funds. The Commission may determine the normal useful life of such equipment.

K. ***Financial Statements*** means balance sheets, statements of operations, statements of cash flows, and capital statements.

L. ***Gross Revenues*** means the gross sales price, rentals and other amounts received by Contractor from or on account of the sale, lease, or other transfer or use of Project-Related Products and Rights, less sales tax paid. Gross Revenues shall be determined as above and in accordance with appropriate Federal cost principles and any economic benefit.

M. ***Key Personnel*** are employees or consultants of the Contractor who are critical to the outcome of the project. For example, they may have expertise in the particular field, or have experience that is not available from another source. Replacing these individuals may affect the outcome of the project.

N. ***Key Subcontractors*** are contractors, subcontractors or vendors to the Contractor and who are critical to the outcome of the project. As with Key Personnel, Key Subcontractors may have expertise in the particular field, or have experience that is not available from another source and replacement may significantly affect the project. An employee of the Contractor's subcontractor or vendor may also qualify as "key".

O. ***Match Fund Participant*** means any party which supplies match funds to the project.

P. ***Materials*** means the substances used in constructing a finished object, commodity, device, article or product.

Q. ***Otherwise Disposing Of*** means (1) project-related products and rights not sold but delivered by the Contractor or its affiliates to others regardless of the basis for compensation, if any, and (2) project-related products and rights put into use by the Contractor or any third party for any purpose other than testing or evaluation of the project-related products and rights.

R. ***Project*** refers to the entire effort undertaken and planned by the Contractor including the work co-funded by the Commission. The project may coincide with or extend beyond the contract period.

S. ***Project-Related Products and Rights*** means any and all energy inventions, discoveries, machines, designs, computer software, products, devices, mechanisms, methods, protocols, processes, algorithms, flowcharts, diagrams, trade secrets, data, copyrights, patents, trademarks, proprietary rights, and the like created or made or discovered or first reduced to practice by the Contractor or other third party as a result, in whole or in part, of the contract award(s) and any and all updates, revisions, modification, enhancements, derivations, variations, additions, continuations, renewals, and extensions thereto and all proceeds and products therefrom.

T. ***Sale*** is sale, license, lease, gift or other transfer of a project-related product or right.

U. ***Sales Price*** means gross revenue, excluding normal returns and allowances such as sales tax, freight and insurance, if applicable, derived from a sale.

V. ***Subject Invention*** means any and all energy invention or discovery conceived, or first actually reduced to practice in the course of or under the Commission-funded portion of this contract (i.e., that portion of this contract for which Contractor has invoiced the Commission and received reimbursement) and includes any art, method, process, machine, manufacture design or composition of matter, or any new and useful improvement hereof, whether patented or unpatented, under the patent laws of the United States of America or any foreign country.

W. ***Technology*** refers to the general subject area where the product or innovation will be used. For example, solar thermal electric generation is a technology area; direct steam generation is an

innovation in this technology area. ***Technology Developed*** means subject invention and/or project-related products and rights.

X. Terms Relating to Data

1) ***Technical Data*** or ***Data*** as used throughout this contract means recorded information regardless of form or characteristic, of a scientific or technical nature. It may, for example, document research; document experimental, developmental, demonstration, or engineering work; or be usable or used to define a design or process; or to procure, produce, support, maintain, or operate material. The data may be graphic or pictorial delineations in media such as drawings or photographs, test specifications or related performance or design type documents or computer software (including computer programs, computer software data bases, and computer software documentation). Examples of technical data include manufacturing techniques and methods, machinery, devices such as tools, products, or components, research and engineering data, engineering drawings and associated lists, specifications, engineering calculations, standards, process sheets, manuals, technical reports, catalog item identification, and related information. Technical data as used herein does not include financial reports, cost analyses and other information incidental to contract administration.

2) ***Business Information*** is information about the operation of a specific business. It includes information concerning the cost and pricing of goods, supply sources, cost analyses, characteristics of customers, books and records of the business, sales information including mailing lists, customer lists, business opportunities, information regarding the effectiveness and performance of personnel, and information incidental to contract administration.

3) ***Public Information*** is information previously published, generally available from more than one source, or information in the public domain. All air monitoring and emission data included in a proposal or requested through a contract are public information.California Government Code Section 6254.7 states that all information, analyses, plans or specifications that disclose the nature, extent, quantity, or degree of air contaminants or other pollution which any article, machine, equipment, or other contrivance will produce, which any state or local agency requires Contractor to provide before the Contractor builds, erects, alters, replaces, operates, sells, rents, or uses such article, etc., are public records.

4) ***Confidential Information*** is technical data or business information Contractor has satisfactorily identified and which the Commission has agreed to designate as confidential.

5) ***Proprietary Data*** is such data as Contractor has identified in a satisfactory manner as being under Contractor's control prior to commencement of performance of this contract or produced by Contractor or its subcontractors at its own expense, and which Contractor has reasonably demonstrated as being of a proprietary nature either by reason of copyright, patent or trade secret doctrines in full force and effect at the time when performance of this contract is commenced.

6) A ***Trade Secret*** is any formula, plan, pattern, process, tool, mechanism, compound, procedure, production data, or compilation of information which is not patented and which is generally known only to certain individuals with a commercial concern and are using it to fabricate, produce or compound an article of trade or a service having commercial value and which gives its user an opportunity to obtain a business advantage over competitors who do not know or use it.

7) ***Generated Data*** is that data which the Contractor collects, collates, records, deduces, reads out or postulates for use in the performance of this contract. In addition, any electronic data

processing program, model or software system developed or substantially modified by the Contractor in the performance of this contract at Commission expense, together with complete documentation thereof, shall be treated as generated data.

8) ***Deliverable Data*** is that data which, under the terms of this contract, is required to be delivered to the Commission.

5. PAYMENTS TO CONTRACTOR

Subject to the conditions listed below, the Commission agrees to reimburse Contractor, monthly in arrears, for expenses incurred in accordance with Exhibit C, Budget. The consideration to be paid Contractor, as provided herein, shall be in compensation for Contractor's actual and allowable expenses incurred in the performance hereof, including travel, per diem, and applicable taxes, unless otherwise expressly so provided. The total amount of this contract shall not exceed $XXXX.00 («spellout»).

A. A request for payment shall consist of, but is not limited to:

1) An invoice that is a **list** of actual expenses incurred during the billing period, backup information is not required, see Audit clauses. The invoice list must include:

a) date prepared, contract number, contractor's Federal ID number and billing period,
b) contractor's actual hourly labor rates by individual, which may be fully loaded,
c) operating expenses, including equipment, travel, miscellaneous,
d) subcontractor invoices, identifying small business and disabled veteran business,
e) overheads, direct & indirect, not included in the fully loaded hourly rate,
f) match fund expenditures, and
g) by task: cumulative amounts, budgeted, billed to date, current billing, and balance of funds.

2) A progress report that documents evidence of progress, which includes written progress reports and deliverables prepared by the Contractor as detailed in Exhibit A and Exhibit B.

B. The Commission will accept computer-generated or electronically transmitted invoices without backup documentation provided that Contractor sends a hardcopy the same day to the address in Exhibit D, Contract Contacts.

C. Contractor shall submit all invoices to the address designated in Exhibit D.

D. Each invoice is subject to Commission Contract Manager approval and payment by the State Controller's Office.

E. The Commission Contract Manager may approve invoices requesting partial payment of a task if the Contractor has demonstrated sufficient evidence of progress toward preparing the deliverables required in that task. The Commission Contract Manager will dispute an invoice requesting payment of all funds remaining in that task budget, if the Commission Contract Manager has not received and approved all of the deliverables due for that task.

F. Payments shall be made to Contractor only for undisputed invoices. An undisputed invoice is an invoice executed by Contractor for services rendered to the Commission and for which additional evidence is not required to make payment. The Commission Contract Manager shall give written notice and specify the known reasons for dispute to Contractor within 15 working days of receipt of the disputed invoice by using a State of California Standard Form 209. If the invoice is not disputed within the 15 working days, the invoice is presumed to be valid, but is subject to audit and verification.

G. Commission shall retain from each invoice an amount equal to 10 per cent (10%) of that invoice, excluding equipment invoices. The retained amount shall be held by the Commission and released to Contractor only upon the Commission's approval that the contract work has been satisfactorily completed and the Final Report has been received and approved. Contractor must submit an invoice for the retained amount.

OR

G. Retention may be released upon completion of tasks that are considered separate and distinct, i.e., the task is a stand alone piece of work and could be done without the other tasks. Tasks for administration or management of the contract and/or subcontractors are not considered separate and distinct tasks. Therefore, retention on those tasks will not be released until the termination of the contract. For all other tasks, the Commission Contract Manager shall specify and notify the Contractor Project Manager in writing which tasks can be paid in full upon their completion. The procedure for releasing retention upon task completion is as follows:

1) Contractor must submit all deliverables required by the task and an invoice requesting payment in full for the task.

2) The Commission Contract Manager must approve the submitted work. The work must be satisfactorily completed and deliverables accepted by the Commission Contract Manager.

3) The Commission Contract Manager must prepare and submit to the Contracts Office, with the Contractor's invoice requesting retention payment, a copy of all approved deliverables and a Contract/Contractor Evaluation Form.

H. Payment shall be made to Contractor no later than 30 calendar days from the date a correct, undisputed invoice is received in the Commission Accounting Office. The State shall make payment to the Contractor for performance under this contract, in accordance with applicable deliverable criteria, receipt and approval by the Commission, and in accordance with invoices submitted.

I. Contractor is entitled to interest penalties beginning on the 46th calendar day that an undisputed invoice is not paid. Contractor is not required to submit an invoice for the interest penalties.

J. Contractor shall retain all records relating to direct and indirect expenses reimbursed to Contractor hereunder, and to hours of employment on this contract by all employees of Contractor for which the Commission is billed. Such records shall be maintained for a period of three years after final payment of this contract, or until audited by the State, whichever occurs first, and shall be available for inspection or audit at any reasonable time by the Commission or its designee.

K. This contract is funded through the Public Interest Energy Research (PIER) Program. Contractor may be providing matching funds identified in Contractor's proposal and as detailed in Exhibit C, Budget. Match sources may be revised subject to the requirements of Exhibit A.

L. These (PIER) contract funds are available until June 30, 2007. The Commission cannot warrant or guarantee that these funds will be extended by the State Legislature. To reflect a reduction of funds, the Commission may amend the contract to reflect any reduction of funds or cancel the contract under the Termination clause.

6. TRAVEL AND PER DIEM

A. Travel identified in Exhibit C, Budget is approved and does not require further authorization.

B. Travel that is not included in Exhibit C, Budget shall require prior written authorization from the Commission Contract Manager. Commission will reimburse travel expenses from the Contractor's office location where the employees assigned to the contract are permanently located.

C. Commission shall reimburse Contractor for travel and per diem, up to but not to exceed, the rates allowed nonrepresented State employees. Commission shall provide Contractor with current rates and updates when revised by the State or requested by Contractor. Travel expenses in excess of the State rates cannot be reimbursed.

D. Contractor must retain documentation of travel expenses in its financial records as follows:

- expenses must be detailed using the current State rates,
- expenses must be listed by trip including dates and times of departure and return, and
- receipts for travel expenses claimed must be retained by Contractor (receipts are not required for travel meals or incidentals within current allowable rates).

7. PURCHASE OF EQUIPMENT

A. Equipment, as defined in Clause 4 and identified in Exhibit C, Budget, PIER Reimbursable Expenditures, is approved for purchase.

B. Equipment not included in Exhibit C, Budget, PIER Reimbursable Expenditures, shall be subject to prior written approval from the Commission Contract Manager.

C. All equipment purchased with Commission funds shall be made subject to the following terms and conditions:

1) The Commission Contract Officer will complete and sign a Uniform Commercial Code (UCC.1) Financing Statement and submit it to the Contractor for signature. The Commission Contract Officer will file the signed UCC.1 with the Secretary of State's Office. Invoices for equipment purchases associated with a UCC.1 will not be processed until the UCC.1 has been filed with the Secretary of State's Office.

2) Title to all non-expendable equipment purchased in part or in whole with Commission funds shall remain with the Commission.

3) Contractor shall assume all risk for maintenance, repair, destruction and damage to equipment while in the possession or subject to the control of Contractor. Contractor is not expected to repair or replace equipment that is intended to undergo significant modification or testing to the point of damage/destruction as part of the work described in Exhibit A, Work Statement.

D. Upon termination of this contract, Commission may:

1) if requested by the Contractor, authorize the continued use of such equipment to further Public Interest Energy Research efforts,

2) by mutual agreement with the Contractor, allow the Contractor to purchase such equipment for an amount not to exceed the residual value of the equipment as of the date of termination of this contract, or

3) request that such equipment be delivered to the Commission with any costs incurred for such return to be borne by the Commission.

8. PROJECT BUDGET REVISIONS

A. Budget reallocations that do not significantly affect the scope of work will be made in the following manner. Contractor shall provide reasonable advance notification to the Commission Contract Manager of any anticipated budget reallocations. Contractor may reallocate a task budget up to 15 percent (15%) of the original task amount, with prior written notification to the Contract Manager. Reallocations of more than 15 percent (15%) of an original task budget require prior written approval of the Commission Contract Manager and the Program Team Lead. Commission Contract Manager will notify the Contractor Project Manager in writing within 10 working days. The Commission Contract Manager shall send approved changes in a revised Exhibit C, Budget to the Commission Contract Officer.

B. Significant changes in the scope of work must be approved by the Commission in the form of a formal amendment. A change is significant if it increases the project budget beyond the approved amount, results in changes in deliverables, moves due dates beyond the term of the contract or modifies the scope of work reasonably beyond that approved at the Commission business meeting.

9. CONTRACT MANAGEMENT

A. Contractor Project Manager

The Contractor Project Manager on behalf of Contractor is designated in Exhibit D. The Contractor Project Manager may not be replaced without Commission Contract Manager's prior written approval. Such approval shall not be unreasonably withheld. The Contractor Project Manager is responsible for the day to day project status, decisions and communications with the Commission Contract Manager.

B. Commission Contract Manager

The Commission Contract Manager is designated in Exhibit D. Commission may change the Contract Manager by notice given Contractor at any time signed by the Commission Contract Officer. The Commission Contract Manager is responsible for the day-to-day contract status, decisions and communications with the Contractor Project Manager. The Commission Contract Manager will review and approve all project deliverables, reports and invoices.

C. Within the contract term stated in contract clause 3, revisions to Exhibit B, Task Deliverables, Schedule and Gantt Chart, may be made by the Contractor Project Manager and approved in writing by the Commission Contract Manager without a formal amendment to the contract.

10. STANDARD OF PERFORMANCE

A. Contractor, its subcontractors and their employees in the performance of Contractor's work under this contract shall be responsible for exercising the degree of skill and care required by customarily accepted good professional practices and procedures used in scientific and engineering research fields.

B. The failure of a project to achieve the technical or economic goals stated in the Work Statement is not a basis for the Commission to determine that the work is unacceptable, unless the work conducted by the Contractor or subcontractors is deemed by the Commission to have failed the foregoing standard of performance.

C. In the event that Contractor or its subcontractor fail to perform in accordance with the foregoing standard of performance, the Commission Contract Manager and the Contractor Project Manager

shall seek to negotiate in good faith an equitable resolution satisfactory to both parties. If such a resolution cannot be reached, the parties shall work through the Commission's dispute resolution process described in the Disputes clause herein.

D. Nothing contained in this section is intended to limit any of the rights or remedies which the Commission may have under law.

E. The Commission Contract Manager shall, upon completion of the contract and/or release of retention, prepare a performance evaluation of Contractor.

1) If the Commission Contract Manager prepares an unsatisfactory evaluation, the evaluation shall be filed with the Department of General Services, Office of Legal Services (DGS), and sent to the Contractor within 15 days. The Contractor shall have 30 days to prepare a response to the evaluation of the contract performance. The Contractor shall send its response to the DGS and a copy to the Commission.

2) The unsatisfactory evaluation and Contractor's response shall not be a public record and shall remain on file for a period of 36 months only.

11. PERSONNEL, SUBCONTRACTORS, DVBES

A. Key Personnel

Contractor's key personnel, listed in Exhibit D, may not be substituted without the Commission Contract Manger's prior written approval. Such approval shall not be unreasonably withheld Contractor may substitute all other personnel, with reasonable advance notification made to the Commission Contract Manager.

B. Key Subcontractors

Contractor's key subcontractors, listed in Exhibit D, may not be substituted without the Commission Contract Manager's prior written approval. Such approval shall not be unreasonably withheld. Contractor may substitute all other subcontractors, with reasonable advance notification made to the Commission Contract Manager. Replacement of key subcontractors is subject to the conditions of subparagraph C.

C. Agreements with Subcontractors

1) Nothing contained in this contract or otherwise, shall create any contractual relationship between the Commission and any subcontractors, and no subcontract shall relieve the Contractor of its responsibilities and obligations hereunder. The Contractor agrees to be as fully responsible to the Commission for the acts and omissions of its subcontractors or persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by the Contractor. The Contractor's obligation to pay its subcontractors is an independent obligation from the Commission's obligation to make payments to the Contractor. As a result, the Commission shall have no obligation to pay or to enforce the payment of any monies to any subcontractor.

2) Contractor shall be responsible for establishing and maintaining contractual agreements with and reimbursement of each of the subcontractors for work performed in accordance with the terms of this contract. Contractor shall provide Commission with copies of all contractual agreements with key subcontractors promptly upon final execution thereof.

3) Flowdown provisions that should be included in subcontracts are listed below. Review each provision for applicability to each situation.

Definitions	Confidentiality
Travel & Per Diem	Intellectual Property Items Developed prior to this Contract
Purchase of Equipment	Recordkeeping, Cost Accounting & Auditing
Standard of Performance	Rights of Parties Regarding Intellectual Property
Disputes	Stop Work
Termination	General Terms & Conditions

3) PIER contractors who are subcontracting with a private or public university may use the terms and conditions negotiated by the Commission for their subcontracts with the university.

4) Replacement or substitution of all non-key subcontractors is permitted with reasonable advance written notification to the Commission Contract Manager and shall be subject to the provisions of subparagraphs D and E below.

5) Each subcontract shall contain provisions similar to those of Clause 18. "Rights of Parties Regarding Intellectual Property", subparagraph F. "Limitations on Contractor Disclosure of Contract Data, Information, Reports and Records," related to the confidentiality of Commission data and its nondisclosure by Contractor.

6) All subcontracts entered into pursuant to this contract shall be subject to examination and audit by the Bureau of State Audits for a period of three years after final payment under the contract.

7) Each subcontract to which the Commission has consented shall contain a provision that further assignments shall not be made to any third or subsequent tier subcontractor without additional advance written consent of Commission.

D. Additions, Removal, or Substitutions of Subcontractors

Any subcontractor change shall be subject to the following conditions:

1) Contractor shall provide the Commission with a copy of its contracting policies and procedures for selecting subcontractors. The Commission Contract Officer shall evaluate the Contractor's process to determine if it is in substantial accord with the State's process. The Commission Contract Officer will provide a written determination to the Contractor. The Commission Contract Officer will retain this set of contracting policies and procedures until the final audit of project records.

2) If Contractor's process is acceptable, Contractor may use its process to solicit and select subcontractors. If, however, Contractor's process does not substantially meet the State's requirements, Contractor shall solicit a minimum of three bids or provide justification, in advance, to the Contract Officer, as to why a competitive process is not appropriate.

3) Thirty days prior to using new policies and procedures, the Contractor shall notify the Commission Contract Officer and provide a detailed, written description of the changes. The Commission Contract Officer will provide a written determination to the Contractor stating whether the revised changes are still in substantial accord with the State's process.

E. Disabled Veteran Business (DVBE) Changes

Contractor must use the DVBE subcontractors/vendors identified in its proposal for the duration of the contract. Replacement of DVBEs must be approved in advance by the Commission. Contractor must notify the Commission Contract Manager in writing. The process of replacing any subcontractor/vendor is defined in subparagraph D above. In addition, the Contractor's written request must include:

1) A letter from the Contractor explaining the reason for the change and the identity of the DVBE subcontractor/vendor changed; or

2) If the change is not a DVBE, an explanation of the Contractor's efforts (good faith) to replace the DVBE with another DVBE.

Contractor shall submit the request to the Commission Contract Manager, the Commission Contract Officer determines compliance with the DVBE. The Contractor's request and the Commission's approval or disapproval shall not be an excuse for noncompliance with any other provision of law including, but not limited to, the subletting and subcontracting fair practices act or any other contract requirements related to substitution of subcontractors.

Contractor's failure to adhere to the DVBE participation goals in its proposal may be cause for contract termination and recovery of damages under the rights and remedies due the Commission under the Termination clause.

12. REPORTING

A. All reports and deliverables shall be delivered to the Accounting Office and address designated in Exhibit D. Confidential reports and deliverables shall be delivered to the Contracts Officer designated in Exhibit D.

B. Progress Reports

The Contractor shall prepare progress reports which summarize all contract activities conducted by the Contractor for the reporting period, including an assessment of the ability to complete the project within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Contract Manager within 30 days after the end of the reporting period. The Commission Contract Manager will specify the report format, contents, and number of copies to be submitted, see Attachment A-1, Progress Report Format.

C. Final Report and Final Meeting

At the conclusion of the contract's technical work and as provided for in Exhibit A, Work Statement, and Exhibit B, Task Deliverables Schedule, Contractor shall prepare a comprehensive written Final Report, including an Executive Summary. The Commission Contract Manager will review and approve the Final Report.

Contractor shall also meet with the Commission to present the findings, conclusions, and recommendations. Both the final meeting and the Final Report must be consummated on or before the termination date of the contract. Final Report specifications and meeting are detailed in the Exhibit A, Work Statement and Attachment A-2, Final Report Format.

D. All reports, including reprints, shall include the following legend:

LEGAL NOTICE

THIS REPORT WAS PREPARED AS A RESULT OF WORK SPONSORED BY THE CALIFORNIA ENERGY COMMISSION (COMMISSION). IT DOES NOT NECESSARILY REPRESENT THE VIEWS OF THE COMMISSION, ITS EMPLOYEES, OR THE STATE OF CALIFORNIA. THE COMMISSION, THE STATE OF CALIFORNIA, ITS EMPLOYEES, CONTRACTORS, AND SUBCONTRACTORS MAKE NO WARRANTY, EXPRESS OR IMPLIED, AND ASSUME NO LEGAL LIABILITY FOR THE INFORMATION IN THIS REPORT; NOR DOES ANY PARTY REPRESENT THAT THE USE OF THIS INFORMATION WILL NOT INFRINGE UPON PRIVATELY OWNED RIGHTS. THIS REPORT HAS NOT BEEN APPROVED OR DISAPPROVED BY THE COMMISSION NOR HAS THE COMMISSION PASSED UPON THE ACCURACY OR ADEQUACY OF THE INFORMATION IN THIS REPORT.

13. RECORDKEEPING, COST ACCOUNTING AND AUDITING

A. Cost Accounting

Contractor agrees to keep separate, complete, and correct accounting of the costs involved in developing, installing, constructing, and testing of project-related product(s) funded under the Commission-funded portion of this contract as well as keep separate, complete, and correct account of the economic benefit(s) from project-related product(s) and right(s). The Commission shall have the right to examine Contractor's books of accounts at all reasonable times to the extent and as is necessary to verify the accuracy of Contractor's reports.

B. Accounting Procedures

The Contractor’s costs shall be determined on the basis of the Contractor’s accounting system procedures and practices employed as of the effective date of this contract. The Contractor’s cost accounting practices used in accumulating and reporting costs during the performance of this contract shall be consistent with the practices used in estimating costs for any proposal to which this contract relates; provided that such practices are consistent with the other terms of this contract and provided, further, that such costs may be accumulated and reported in greater detail during performance of this contract. The Contractor’s accounting system shall distinguish between direct costs and indirect costs. All costs incurred for the same purpose, in like circumstances, are either direct costs only or indirect costs only with respect to costs incurred under this contract.

C. Allowability of Costs

1) Allowable Costs

The costs for which the Contractor shall be reimbursed under this contract include all costs, direct and indirect, incurred in the performance of work that are identified in the Contractor’s proposal and contract Exhibit C, Budget.. Costs must be incurred within the term of the contract. Factors to be considered in determining whether an individual item of cost is allowable include (i) reasonableness of the item, (ii) allocability of the item to the work, (iii) the Contractor’s use of applicable Federal OMB Circulars A-87, A-21, A-122 or FAR Part 31, and (iv) the other terms and conditions of this contract. Federal guidelines are on-line at:www.whitehouse.gov/omb.

2) Unallowable Costs

The following is a description of some specific items of cost that are unallowable; provided, however, that the fact that a particular item of cost is not included shall not mean that it is

allowable. Details concerning the allowability of costs are available from the Commission Accounting Office.

a) Contingency Costs, Imputed Costs, Fines and Penalties, Losses on Contracts, and Excess Profit Taxes are unallowable.

b) The Commission will pay for State or local sales or use taxes on the services rendered or equipment, parts or software supplied to the Commission pursuant to this contract. The State of California is exempt from Federal excise taxes.

3) Except as provided for in this contract, Contractor shall use the Federal OMB Circulars A-87, A-21, A-122 or FAR Part 31 in determining allowable and unallowable costs.

D. Audit Rights

Contractor shall maintain books, records, documents, and other evidence, based on the procedures set forth above, sufficient to reflect properly all costs claimed to have been incurred in performing this contract. The Commission, an agency of the State or, at the Commission's option, a public accounting firm designated by Commission, may audit such accounting records at all reasonable times with prior notice by Commission. Commission shall bear the expense of such audits. It is the intent of the parties that such audits shall ordinarily be performed not more frequently than once every twelve (12) months during the performance of the work and once at any time within three (3) years following payment by Commission of the Contractor's final invoice. However, performance of any such interim audits by Commission does not preclude further audit.

Contractor agrees that the Commission, the Department of General Services, the Bureau of State Audits, or their designated representative shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this contract. Contractor agrees to maintain such records for possible audit for a minimum of three (3) years after final payment, unless a longer period of record retention is stipulated. Contractor agrees to allow the auditor(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. Further, Contractor agrees to include a similar right of the State to audit records and interview staff in any subcontract related to performance of this contract. (GC 8546.7, PCC 10115 et seq., CCR Title 2, Section 1896)

E. Refund to Commission

If Commission determines, pursuant to subarticle C or otherwise, that any invoiced and paid amounts exceed the actual allowable incurred costs and earned fixed fees (if any), Contractor shall repay such amounts to Commission within thirty (30) days of request or as otherwise agreed by the Commission and Contractor. If Commission does not receive such repayments, Commission shall be entitled to withhold further payments to the Contractor.

F. Audit Cost

The cost of the audit shall be borne by the Commission except when the results of the audit reveal an error detrimental to the Commission exceeding more than ten percent (10%) or $5,000 (whichever is greater) of 1) the amount audited, or 2) if a royalty audit, the total royalties due in the period audited. In these exceptions, Contractor agrees to reimburse Commission for reasonable costs and expenses incurred by the Commission in conducting such audit.

14. BUSINESS ACTIVITY REPORTING

A. Contractor shall promptly notify the Commission Contract Manager of the occurrence of each of the following:

1) A change of address.
2) A change in the business name or ownership.
3) The existence of any litigation or other legal proceeding affecting the project.
4) The occurrence of any casualty or other loss to project personnel, equipment or third parties of a type commonly covered by insurance.
5) Contractor's receipt of notice of any claim or potential claim against Contractor for patent, copyright, trademark, service mark and/or trade secret infringement that could affect the Commission's rights.

B. Contractor shall not change or reorganize the type of business entity under which it does business except upon prior written notification to the Commission. A change of business entity or name change requires an amendment assigning or novating the contract to the changed entity. In the event the Commission is not satisfied that the new entity can perform as the original Contractor, the Commission may terminate this contract as provided in the Termination clause.

15. REVIEW AND NOTICE OF CONFLICTING TERMS

Contractor warrants and attests that it has conducted a detailed review of the terms and conditions of its existing project related third party agreements and has identified all known or reasonably foreseeable conflicts with this contract's terms and conditions and has disclosed the conflicts in writing to the Commission prior to executing this contract. In the event further conflicts are identified, Contractor and Commission agree that these conflicts shall be addressed using the procedure described in the Disputes clause. Nothing in this contract is intended to nullify or obviate any prior third party agreements executed by Contractor. However, the Commission is free to terminate this contract if the conflict impairs or diminishes the value of this contract.

16. CONFIDENTIALITY

A. Determination

The Commission Executive Director makes the final determination of confidentiality. In the event there is a disagreement over the items to be delivered under the contract, the parties shall use the Disputes clause. Those items to be delivered as confidential shall be subject to the Commission Executive Director's determination of confidentiality. If the Contractor wishes to appeal the Executive Director's determination, the appeal shall be made to the full Commission. If the Contractor disagrees with this determination, the Contractor may seek judicial review as per Title 20 CCR 2506, et seq.

AND

The Commission Contract Manager and the Contractor will identify pre-existing confidential or proprietary items to be delivered under this contract.

Or

The Contractor has not identified any confidential or proprietary items to be delivered under this contract.

Or

The Commission agrees to keep confidential the items listed in Exhibit E.

B. Public and Confidential Deliverables

Only those items specifically listed in Exhibit E or in a subsequent determination of confidentiality qualify as confidential deliverables. All deliverables including, but not limited to,

progress reports, task deliverables and the Final Report shall not contain confidential information except when the Commission Contract Manager and the Contractor deem it necessary to include confidential information in a deliverable. In such event, the Contractor shall prepare the deliverable in two separate volumes, one for public distribution and one to be maintained in the Commission's confidential records.

C. Future Confidential Information

The Contractor and the Commission agree that during this contract, it is possible that the Contractor may develop additional data or information that the Contractor considers to be protectable as confidential information. The Commission Contract Manager shall provide a copy of the Commission Application for Confidential Designation to the Contractor Project Manager. Contractor must list all items and information along with justification for confidentiality and submit the application to the Commission Contract Manager. The Commission Executive Director makes the final determination of confidentiality. Such subsequent determinations will be added to Exhibit E.

D. Identifying and Submitting Confidential Information

All confidential information submitted by the Contractor shall be marked "Confidential" on each document containing the confidential information and delivered in a sealed package to the Commission Contract Officer identified in Exhibit D. The Commission Contract Officer will notify the Commission Contract Manager that the confidential information has been received and is in the Contracts Office for review. The confidential information will only be available to those persons authorized by the Executive Director.

17. INTELLECTUAL PROPERTY ITEMS DEVELOPED PRIOR TO THIS CONTRACT

A. The Commission makes no claim to intellectual property that existed prior to this contract and was developed without Commission funding.

B. The Contractor gives notice that the items listed in Exhibit E have been developed without Commission funding and prior to the start of this contract. This list represents a brief description of the prior developed intellectual property. A detailed description of the intellectual property, as it exists on the effective date of this contract, may be necessary if Commission funds are used to further develop the listed intellectual property. This information will assist the parties make an informed decision regarding intellectual property rights and possible repayment obligations.

OR

B. Contractor has not identified any pre-existing intellectual property.

18. RIGHTS OF PARTIES REGARDING INTELLECTUAL PROPERTY

A. Commission's Rights in Deliverables

Deliverables and reports specified for delivery to the Commission under this contract shall become the property of the Commission. The Commission may use, publish, and reproduce the deliverables and reports subject to the provisions of subparagraph C.

B. Rights in Technical, Generated, and Deliverable Data

1) Contractor's Rights

All data (i.e., technical, generated and deliverable data) produced under this contract shall be the property of the Contractor, limited by the license retained by the Commission in 2) below, and the rights the Commission has in deliverables specified above in A).

2) Commission's Rights

Contractor shall provide the Commission with a copy of all technical, generated and deliverable data produced under the contract. Contractor does not have to copy and submit data the Commission Contract Manager has identified as being unusable to the Commission and the PIER program. For instance, some data may not warrant routine copying and shipping because the raw data is too disaggregated or voluminous for practical application. Retention of such data at the Contractor's facility for inspection, review and possible copying by the Contract Manager is expected to be a more efficient use of Commission staff and the Contractor's time and efforts.

For all data (technical, generated and deliverable) produced under this contract, the Commission retains a no-cost, non-exclusive, non-transferable, irrevocable, royalty-free, worldwide, perpetual license to use, publish, translate, produce and to authorize others to produce, translate, publish and use the data, subject to the provisions of subparagraph C.

C. Limitations on Commission Disclosure of Contractor's Confidential Records

1) Data provided to the Commission by Contractor, which data the Commission has not already agreed to keep confidential and which Contractor seeks to have designated as confidential, or is the subject of a pending application for confidential designation, shall not be disclosed by the Commission except as provided in Title 20 CCR Sections 2506 and 2507 (or as they may be amended), unless disclosure is ordered by a court of competent jurisdiction.

2) It is the Commission's intent to use and release project results such as deliverables and data in a manner calculated to further PIER while protecting proprietary or patentable interests of the parties. Therefore, the Commission agrees not to disclose confidential data or the contents of reports containing data considered by Contractor as confidential, without first providing a copy of the disclosure document for review and comment by Contractor. Contractor shall have no less than 10 working days for review and comment and, if appropriate, to make an application for confidential designation on some or all of the data. The Commission shall consider the comments of Contractor and use professional judgment in revising the report, information or data accordingly.

D. Exclusive Remedy

In the event the Commission intends to publish or has disclosed data the Contractor considers confidential, the Contractor's exclusive remedy is a civil court action for injunctive relief. Such court action shall be filed in Sacramento County, Sacramento, California.

E. Waiver of Consequential Damages

IN NO EVENT WILL THE ENERGY COMMISSION BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES BASED ON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL THEORY FOR THE DISCLOSURE OF CONTRACTOR'S CONFIDENTIAL RECORDS, EVEN IF THE ENERGY COMMISSION HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. DAMAGES THAT THE ENERGY COMMISSION WILL NOT BE RESPONSIBLE FOR INCLUDE, BUT ARE

NOT LIMITED TO, LOSS OF PROFIT; LOSS OF SAVINGS OR REVENUE; LOSS OF GOODWILL; LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT; COST OF CAPITAL; COST OF ANY SUBSTITUTE EQUIPMENT, FACILITIES, OR SERVICES; DOWNTIME; THE CLAIMS OF THIRD PARTIES INCLUDING CUSTOMERS; AND INJURY TO PROPERTY.

F. Limitations on Contractor Disclosure of Contract Data, Information, Reports and Records

1) Contractor will not disclose the contents of the final or any preliminary deliverable or report without first providing a copy of the disclosure document for review and comment to the Commission Contract Manager. The Contractor shall consider the comments of the Commission Contract Manager and use professional judgment in revising the reports, information or data accordingly.

2) After any document submitted has become a part of the public records of the State, Contractor may, if it wishes to do so at its own expense, publish or utilize the same, but shall include the legal notice stated above.

3) Notwithstanding the foregoing, in the event any public statement is made by the Commission as to the role of Contractor or the content of any preliminary or Final Report of Contractor hereunder, Contractor may, if it believes such statement to be incorrect, state publicly what it believes is correct.

4) No record that is provided by the Commission to Contractor for Contractor's use in executing this contract and which has been designated as confidential, or is the subject of a pending Application for Confidential Designation, except as provided in Title 20, CCR Sections 2506 and 2507, shall be disclosed, unless disclosure is ordered by a court of competent jurisdiction (Title 20 CCR Section 2501, et seq.). At the election of the Commission Contract Manager, the Contractor, its employees and any subcontractor shall execute a "Confidentiality Agreement," supplied by the Commission Contract Manager.

5) Contractor acknowledges that each of its officers, employees, and subcontractors who are involved in the performance of this contract will be informed about the restrictions contained herein and to abide by the above terms.

G. Proprietary Data

Proprietary data owned by the Contractor shall remain with the Contractor throughout the term of this contract and thereafter. The extent of Commission access to the same and the testimony available regarding the same shall be limited to that reasonably necessary to demonstrate, in a scientific manner to the satisfaction of scientific persons, the validity of any premise, postulate or conclusion referred to or expressed in any deliverable hereunder.

H. Preservation of Data

Any data which is reserved to the Contractor by the express terms hereof, and pre-existing proprietary or confidential data which has been utilized to support any premise, postulate or conclusion referred to or expressed in any deliverable hereunder, shall be preserved by the Contractor at the Contractor's own expense for a period of not less than three years after receipt and approval by the Commission of the Final Report herein.

I. Destruction of Data

Before the expiration of three years and before changing the form of or destroying any such data, the Contractor shall notify Commission of any such contemplated action and Commission may, within thirty (30) days after said notification, determine whether it desires said data to be further preserved. If Commission so elects, the expense of further preserving said data shall be paid for by the Commission. Contractor agrees that Commission may at its own expense, have reasonable access to said data throughout the time during which said data is preserved. Contractor agrees to use its best efforts to identify competent witnesses to testify in any court of law regarding said data or, at Commission's expense, to furnish such competent witnesses.

J. Patent Rights

Patent rights for subject inventions will be the property of Contractor, subject to the Commission retaining a no-cost, nonexclusive, nontransferable, irrevocable royalty-free, worldwide perpetual license to use or have practiced for or on behalf of the State of California the subject invention(s) for governmental purposes. Contractor must obtain agreements to effectuate this clause with all persons or entities, except for the U.S. Department of Energy (DOE), obtaining ownership interest in the patented subject invention(s). Previously documented (whether patented or unpatented under the patent laws of the United States of America or any foreign country) inventions are exempt from this provision.

K. March-In Rights

The Contractor shall forfeit and assign to the Commission, at the Commission's request, all rights on a subject invention if either: 1) Contractor fails to apply for a patent on subject inventions(s) developed under this contract within six months of conceiving or first actually reducing to practice the technology or 2) Contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention. In this event, the Contractor agrees to relinquish all rights, subject to DOE reserved rights, on the subject invention to the Commission. The Commission will have the unfettered right to use and/or dispose of the rights in whatever manner it deems most suitable to help transfer the technology into the market place, including but not limited to, seeking patent protection, or licensing the invention.

L. Commission's Rights to Invention.

Contractor and all persons and/or entities obtaining an ownership interest in subject invention(s) shall include within the specification of any United States patent application, and any patent issuing thereon covering a subject invention, the following statement:

"THIS INVENTION WAS MADE WITH STATE OF CALIFORNIA SUPPORT UNDER CALIFORNIA ENERGY COMMISSION CONTRACT NUMBER «KNUMBER». THE ENERGY COMMISSION HAS CERTAIN RIGHTS TO THIS INVENTION."

M. Commission's Interest in Inventions.

Upon the perfecting of a patent application on any subject invention, Contractor will complete and sign a Uniform Commercial Code (UCC.1) Financing Statement and submit it to the Commission Contract Manager for complete processing. The Commission Contract Manager will review the UCC.1 for complete information and file the satisfactory UCC.1 with the Secretary of State's Office.

N. Copyrights

1) Copyrightable material first produced under this contract shall be owned by the Contractor, limited by the license granted to the Commission in 2) below.

2) Contractor agrees to grant the Commission a royalty-free, no-cost nonexclusive, irrevocable, nontransferable worldwide, perpetual license to produce, translate, publish, use and dispose of, and to authorize others to produce, translate, publish, use and dispose of all copyrightable material first produced or composed in the performance of this contract.

3) Contractor will apply copyright notices to all deliverables using the following form or such other form as may be reasonably specified by Commission.

"©[YEAR OF FIRST PUBLICATION OF DELIVERABLE],
[THE COPYRIGHT HOLDER'S NAME].
ALL RIGHTS RESERVED."

4) Software

In the event software is developed that is not a deliverable under the contract, Contractor shall have the right to copyright and/or patent such software and grants the Commission a royalty-free, no-cost, non-exclusive, irrevocable, non-transferable, worldwide, perpetual license to produce and use the software, its derivatives and upgrades for governmental purposes.

O. Intellectual Property Indemnity

Contractor warrants that Contractor will not, in its supplying of the work under this contract's work statement, knowingly infringe or misappropriate any intellectual property right of a third party, and that it will conduct a reasonable investigation of the intellectual property rights of third parties to avoid such infringement. Contractor will defend and indemnify Commission from and against any claim, lawsuit or other proceeding, loss, cost, liability or expense (including court costs and reasonable fees of attorneys and other professionals) to the extent arising out of: (i) any third party claim that a deliverable infringes any patent, copyright, trade secret or other intellectual property right of any third party, or (ii) any third party claim arising out of the negligent or other tortious act(s) or omission(s) by the Contractor, its employees, subcontractors or agents, in connection with or related to the deliverables or the Contractor's performance thereof under this contract.

19. ROYALTY PAYMENTS TO COMMISSION

In consideration of Commission providing funding to Contractor, Contractor agrees to pay Commission royalties on the terms and conditions hereinafter set forth.

A. Contractor agrees to pay Commission a royalty of 1.5% (one and one-half percent) of the Sale Price on the sale of each and every project-related product or right that the Contractor receives.

B. Contractor's obligation to make payments to Commission shall commence from the date project related products or rights are first sold and shall extend for a period of fifteen years thereafter. Payments are payable in annual installments and are due the first day of March in the calendar year immediately following the year during which Contractor receives gross revenues.

C. Early Buyout. Contractor has the option of paying its royalty obligations to Commission without a pre-payment penalty, provided Contractor makes the payment within two years from the date at which royalties are first due to Commission, in the lump sum amount equal to two (2) times the amount of funds drawn down on the contract.

D. Contractor agrees not to make any sale, license, lease, gift or other transfer of any Project-Related Products and Rights with the intent of, or for the purpose of, depriving Commission of royalties

hereunder. Generally, this means that Contractor will not make any sale, license, lease or other transfer of Project-Related Products and Rights for consideration other than fair market value. Further, Contractor agrees that such activity constitutes breach of this contract and that Contractor agrees to repay within 60 days the amount due under subparagraph C above (Early Buyout).

E. Contractor acknowledges that a late payment of royalties owed to the Commission will cause the Commission to incur costs not contemplated by the parties. If a royalty payment is not paid when due, Contractor agrees to pay the Commission a late fee equal to two percent (2%) of the payment due. Additionally, Contractor agrees that royalty payments not paid within fifteen (15) days of the due date shall thereupon become debt obligations of Contractor to the Commission, due upon demand and bearing interest at the maximum interest rate allowed by law.

F. Contractor shall maintain separate accounts within its financial and other records for purposes of tracking components of sales and royalties due to Commission under this contract.

G. Payments to Commission are subject to audit as provided for under the Recordkeeping, Cost Accounting and Auditing clause.

H. In the event of default hereunder, Commission shall be free to exercise all rights and remedies available to it herein, and under law and at equity. The occurrence of any of the following events or conditions shall cause default under this contract:

1) Contractor's failure to pay when due, any amount due and payable under the terms of this contract.

20. NOTICES TO PARTIES

Notice to either party may be given by certified mail properly addressed, postage fully prepaid, to the address designated in Exhibit D for each respective party or to such other address as either party shall notify the other in accordance with this section. Such notice shall be effective when received, as indicated by post office records, or if deemed undeliverable by post office, such notice shall be effective nevertheless fifteen (15) days after mailing.

Alternatively, notice may be given by personal delivery to the party at the address designated in Exhibit D. Such notice shall be deemed effective when delivered unless a legal holiday for State offices commences during said 24-hour period, in which case the effective time of the notice shall be postponed 24 hours for each such intervening day.

21. DISPUTES

In the event of a contract dispute or grievance between the Contractor Project Manager and Commission Contract Manager, the parties shall use any or all of the following procedures:

A. Commission Dispute Resolution

If the Commission Contract Manager and the Contractor Project Manager cannot resolve a contract dispute or grievance, Contractor Project Manager and Commission Contract Manager shall each prepare a package in writing stating the issues in dispute, the legal authority or other basis for their respective positions and the remedy sought. The packages must be submitted to the Commission Dispute Resolution Committee. The Commission Contract Manager will notify the Contractor Project Manager of the current Committee members. The Committee shall make a determination on the problem within ten (10) working days after receipt of the package.

If Contractor disagrees with the Committee's decision, Contractor may appeal to the full Commission at a regularly scheduled business meeting. The Committee will provide the Contractor with the current procedures for placing the appeal on a Commission Business Meeting Agenda.

Contractor shall continue with its responsibilities under this contract during any dispute.

B. Binding Arbitration

Should the Commission's Dispute Resolution procedure identified in Paragraph A. above fail to resolve a contract dispute or grievance to the satisfaction of the Contractor, the parties must mutually agree to have the dispute or grievance resolved through binding arbitration. The arbitration proceeding shall take place in Sacramento County, California, and shall be governed by the commercial arbitration rules of the American Arbitration Association (AAA) in effect on the date the arbitration is initiated. One (1) arbitrator who is an expert in the particular field of the dispute or grievance shall resolve the dispute or grievance. The arbitrator shall be selected in accordance with the aforementioned commercial arbitration rules. The decision rendered by the arbitrator shall be final, and judgment may be entered upon it in accordance with the applicable law in any court having jurisdiction thereof. The demand for arbitration shall be made no later than six (6) months after the date of the contract's termination, irrespective of when the dispute or grievance arose, and irrespective of the applicable statute of limitations for a suit based on the dispute or grievance. If the parties do not mutually agree to arbitration, the sole forum to resolve the dispute is State court.

The cost of arbitration shall be borne by the parties as follows:

1) The AAA's administrative fees shall be borne equally by the parties;
2) The expense of a stenographer shall be borne by the party requesting a stenographic record;
3) Witness expenses for either side shall be paid by the party producing the witness;
4) Each party shall bear the cost of its own travel expenses;
5) All other expenses shall be borne equally by the parties, unless the arbitrator apportions or assesses the expenses otherwise as part of his or her award.

At the option of the parties, any or all of these arbitration costs may be deducted from any balance of contract funds. Both parties must agree, in writing, to utilize contract funds to pay for arbitration costs.

22. STOP WORK

The Commission Contract Officer may, at any time, by written notice to Contractor, require Contractor to stop all or any part of the contract's work tasks. Stop Work Orders may be issued for reasons such as a project exceeding budget, standard of performance, out of scope work, delay in project schedule, misrepresentations, etc.

A. Compliance

Upon receipt of such stop work order, Contractor shall immediately take all necessary steps to comply therewith and to minimize the incurrence of costs allocable to work stopped.

B. Equitable Adjustment

An equitable adjustment shall be made by Commission based upon a written request by Contractor for an equitable adjustment. Contractor must make such adjustment request within thirty (30) days from the date of receipt of the stop work notice.

C. Terminating a Stop Work Order

Contractor shall resume the stopped work only upon receipt of written instructions from the Commission's Contract Officer terminating the stop work order.

23. TERMINATION

A. Purpose

The parties agree that because the Commission is a state entity and contracts on behalf of all Californian ratepayers, it is necessary for the Commission to be able to terminate, at once, upon the default of Contractors and to proceed with the work required under the Contract in any manner the Commission deems proper. Contractor specifically acknowledges that the termination of the Contract by the Commission under the terms set forth below is an essential term of the Contract, without which the Commission would not enter into the Contract. Contractor further agrees that upon any of the events triggering the termination the Contract by the Commission, the Commission has the right to terminate the Contract, and it would constitute bad faith of the Contractor to interfere with the immediate termination of the Contract by the Commission.

B. Breach

The Commission shall provide the Contractor written notice of intent to terminate due to Contractors breach. Contractor will have 15 calendar days to fully perform or cure the breach. In the event Contractor does not cure the breach within 15 days, the Commission may, without prejudice to any of its other remedies, terminate this contract upon five (5) calendar days written notice to Contractor. In such event, Commission shall pay Contractor only the reasonable value of the satisfactorily performed services theretofore rendered by Contractor, as may be agreed upon by the parties or determined by a court of law, but not in excess of the contract maximum payable.

C. For Cause

The Commission may, for cause, and at its option, terminate this contract upon giving thirty calendar (30) days, advance written notice to Contractor. In such event, Contractor agrees to use all reasonable efforts to mitigate its expenses and obligations. Commission will pay Contractor for services rendered and expenses incurred within 30 days after notice of termination which could not by reasonable efforts of Contractor have been avoided, but not in excess of contract maximum payable. Contractor agrees to relinquish possession of equipment purchased for this project with Commission funds to Commission, or Contractor may, with approval of Commission, purchase said equipment as provided by the terms of this contract.

The term "for cause" includes, but is not limited to, the following reasons:

- Partial or complete loss of match funds;
- Reorganization to a business entity unsatisfactory to the Commission;
- Retention or hiring of subcontractors, or replacement or addition of Key Personnel that fail to perform to the standards and requirements of this contract;
- Failure to utilize the DVBE subcontractors/vendors in Contractor's proposal,
- Contractor is not able to pay its debts as they become due and/or Contractor is in default of an obligation that impacts Contractor's ability to perform under this Contract,
- Significant change in State or Energy Commission policy such that the work or product being funded would not be supported by the Commission; or

- In the case of a technical support contract, changes in Commission staff such that Commission staff can do the work or product being funded.

D. Gratuities

The Commission may, by written notice to Contractor, terminate the right of Contractor to proceed under this contract if it is found, after notice and hearing by Commission or by Executive Director of the Energy Commission or his duly authorized representative, that gratuities were offered or given by Contractor, or any agent or representative of Contractor, to any officer or employee of the Commission, with a view toward securing a contract or securing favorable treatment with respect to awarding or amending or making a determination with respect to performance of such contract.

In the event this contract is terminated as provided herein, Commission shall be entitled to (1) pursue the same remedies against Contractor as it could pursue in the event of the breach of the contract by Contractor, and (2) exemplary damages in an amount which shall be not less than three nor more than ten times the cost incurred by Contractor in providing any such gratuities to any such officer or employee, as a penalty, in addition to any other damages to which it may be entitled by law.

The rights and remedies of Commission provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

E. Advantage

Contractor, team member or subcontractors shall not hire, contract with, or otherwise commit themselves to an advantageous economic contract with the Commission's Contractor/subcontractor who evaluated Contractor's proposal. The Commission reserves the right to cancel the contract.

24. GENERAL TERMS & CONDITIONS

A. It is understood and agreed that certain contract provisions shall survive the completion or termination date of this contract for any reason. The contract provisions include, but are not limited to:

• "Payments to Contractor"	Section 5
• "Purchase of Equipment"	Section 7
• "Recordkeeping, Cost Accounting and Auditing"	Section 13
• "Business Activity Reporting"	Section 14
• "Rights of Parties Regarding Intellectual Property"	Section 18
• "Royalty Payments to Commission"	Section 19
• "Disputes"	Section 21
• "Termination"	Section 23
• "Site Access"	Section 24. D
• "Indemnification"	Section 24. L

B. The clause headings appearing in this contract have been inserted for the purpose of convenience and ready reference. They do not purport, and shall not be deemed, to define, limit, or extend the scope or intent of the clauses to which they appertain.

C. If public hearings on the subject matter dealt with in this contract are held during the period of the contract, and if requested by the Commission, Contractor will make available to testify the personnel assigned to this contract. Commission will reimburse Contractor for labor and travel of said personnel at the contract rates for such work.

D. The Energy Commission staff or its representatives shall have reasonable access to the construction site or R&D laboratory, and all project records.

E. This contract shall be conducted in accordance with the terms and conditions of California Energy Resources Conservation and Development Commission (hereafter "Commission") Request for Proposal number _____, Addendum # __, Contractor's proposal, dated «propsldate», this contract, and the attached exhibits listed below. Contractor's proposal is not attached hereto, but is expressly incorporated by reference into this contract. In the event of conflict or inconsistency between the terms of this contract and Contractor's proposal, this contract and its exhibits shall be considered controlling.

F. In the interpretation of this contract, any inconsistencies between the terms hereof and the exhibits shall be resolved in favor of the terms hereof.

G. The Commission reserves the right to seek further written assurances from the Contractor and its team that the work of the project under the contract will be performed consistent with the terms of the contract.

H. No alteration or variation of the terms of this contract shall be valid unless made in writing and signed by the parties hereto, and no oral understanding or agreement not incorporated herein, shall be binding on any of the parties hereto. Other than as specified herein, no document or communication passing between the parties hereto shall be deemed as part of this contract.

I. This contract is not assignable by the Contractor, either in whole or in part, without the consent of the State. Consent consists of a formal written contract amendment approved by the Commission and DGS. Such consent shall not be unreasonably withheld.

J. It is hereby understood and agreed that this contract shall be governed by the laws of the State of California as to interpretation and performance.

K. Time is of the essence in this contract.

L. Contractor agrees to indemnify, defend and save harmless the State, its officers, agents and employees from any and all claims and losses accruing or resulting to any and all contractors, subcontractors, suppliers, laborers, and any other person, firm or corporation furnishing or supplying work services, materials, or supplies in connection with the performance of this contract, and from any and all claims and losses accruing or resulting to any person, firm or corporation who may be injured or damaged by Contractor in the performance of this contract.

M. Contractor warrants, represents and agrees that it and its subcontractors, employees and representatives shall at all times comply with all applicable State contracting laws, codes, rules and regulations in the performance of this contract.

N. Contractor, and the agents and employees of Contractor, in the performance of this contract, shall act in an independent capacity and not as officers or employees or agents of the State.

O. No waiver of any breach of this contract shall be held to be a waiver of any other or subsequent breach. All remedies afforded in this contract shall be taken and construed as cumulative, that is, in addition to every other remedy provided therein or by law. The failure of Commission to enforce at any time any of the provisions of this contract, or to require at any time performance by Contractor of any of the provisions therefore, shall in no way be construed to be a waiver of such provisions, nor in any way affect the validity of this contract or any part thereof or the right of Commission to thereafter enforce each and every such provision.

P. If any provision of this contract or the application thereof is held invalid, that invalidity shall not affect other provisions of the contract.

Q. In no event shall any course of dealing, custom or trade usage modify, alter, or supplement any of the terms or provisions contained herein.

R. During the performance of this Agreement, Contractor and its subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, physical disability (including HIV and AIDS), mental disability, medical condition (cancer), age (over 40), marital status, and denial of family care leave. Contractor and subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Contractor and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12990 (a-f) et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in full. Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other Agreement.

Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the Agreement.

S. The Contractor shall certify in writing under penalty of perjury, the minimum, if not exact, percentage of recycled content, both post consumer waste and secondary waste as defined in the Public Contract Code, Sections 12161 and 12200, in materials, goods, or supplies offered or products used in the performance of this Agreement, regardless of whether the product meets the required recycled product percentage as defined in the Public Contract Code, Sections 12161 and 12200. Contractor may certify that the product contains zero recycled content. (PCC 10233, 10308.5, 10354).

T. For any contract in excess of $100,000:

- the Contractor recognizes the importance of child and family support obligations and shall fully comply with all applicable state and federal laws relating to child and family support enforcement, including, but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Chapter 8 (commencing with section 5200) of Part 5 of Division 9 of the Family Code; and

- the Contractor, to the best of its knowledge is fully complying with the earnings assignment orders of all employees and is providing the names of all new employees to the New Hire Registry maintained by the California Employment Development Department."

U. The Government Code Chapter on Antitrust claims contains the following definitions:

- "Public purchase" means a purchase by means of competitive bids of goods, services, or materials by the State or any of its political subdivisions or public agencies on whose behalf the Attorney General may bring an action pursuant to subdivision (c) of Section 16750 of the Business and Professions Code).

- "Public Purchasing Body" means the State or the subdivision or agency making a public purchase. Government Code Section 4550 (b).

1) In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder. Government Code Section 4552.

2) If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under this chapter, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery. Government Code Section 4553.

3) Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under this part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action. Government Code Section 4554.

V. In the event that any provision of this Contract is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Contract have force and effect and shall not be effected thereby.

W. Contractor by signing this agreement hereby acknowledges the applicability of Government Code Section 16645 through Section 16649 to this agreement.

1) Contractor will not assist, promote or deter union organizing by employees performing work on a state service contract, including public works contract.
2) No state funds received under this agreement will be used to assist, promote or deter union organizing.
3) Contractor will not, for any business conducted under this agreement, use any state property to hold meetings with employees or supervisors, if the purpose of such meetings is to assist, promote or deter union organizing, unless the state property is equally available to the general public for holding meetings.
4) If Contractor incurs costs, or makes expenditures to assist, promote or deter union organizing, Contractor will maintain records sufficient to show that no reimbursement from state funds has been sought for these costs, and that Contractor shall provide those records to the Attorney General upon request.

Contractor hereby certifies that no request for reimbursement, or payment under this agreement will seek reimbursement for costs incurred to assist, promote or deter union organizing.

RFP Attachment 8 (A)

Instructions for Completing Agreement Exhibit A, Scope of Work

The Exhibit A Template contains the framework to use to complete the Scope of Work. That template has instructions in blue that are to be deleted as it is filled out. The following are additional instructions for the items in the Scope of Work. At the end of these instructions, there are examples of Technical Tasks to provide guidance in drafting your own.

I. Glossary

Spell out each acronym used in the Scope of Work. Also include definitions of odd or unusual terms. Think about the document from the perspective of someone who does not work in the particular industry or discipline.

II. Problem Statement

Describe the problem that this research will address in 1 to 2 paragraphs maximum. Describe the scientific and technological baseline, that is, the current state-of-the-art or the developmental status of the subject technology to be advanced.

Identify entities engaged in development of the subject technology. If no one else is performing any related development work, state that explicitly. Identify whether or not the proposed project duplicates or overlaps with other ongoing RD&D.

Emphasize past advances that you have made in areas relevant to the proposed work. Describe your relevant work, accomplishments, failures, ongoing work, RD&D projects, funding levels and funding sources. Be quantitative and rigorous in the discussion. List research papers, conference papers and presentations with full references, and summarize significant accomplishments that have been reported.

Within the technological baseline discussion, explain the status of the proposed technology in general so as to put it within the context of any larger development effort. The discussion could include factors such as developers and manufacturers, development status (whether laboratory scale, alpha testing, beta testing, commercially available), performance characteristics (efficiency, lifetime, emissions and other environmental characteristics including footprint and land requirement), manufacturing cost and selling price, and operation and maintenance costs.

The scientific and technological baseline described here must facilitate the evaluation of the proposed RD&D effort. That is, there must be continuity between the current status of the subject technology and the proposed effort.

Describe the deficiencies that exist for the subject technology. The deficiencies should illuminate the question of *why* the proposed project should be done.

Identify and discuss the principal barriers, key unresolved issues, and knowledge gaps that hinder the development and widespread use of the products of the proposed research in

California. Barriers may be grouped under the following categories, or other categories that the Bidder deems appropriate:

- Scientific and technological – such as insufficient scientific understanding of relevant phenomena and processes, inadequate materials, high cost of materials, poor durability, low reliability, low power density, low energy density, lack of detailed engineering designs and design trade-off analyses, inadequate component development, high cost of fabrication techniques, lack of automated manufacturing, insufficient field testing, or insufficient field demonstrations.
- Market – such as inadequate consumer knowledge or limited system supply and maintenance infrastructure.
- Institutional – such as regulatory hurdles (e.g., atmospheric emission limitations) or lack of adopted interconnection standards.
- Environmental – such as NOx emissions above those set by Air Resources Boards or Districts within California, excessive noise, or high water consumption.

Explain why these barriers have not been addressed by the marketplace or by other institutions.

Explain why the barriers should be addressed at this time. For example, place the proposed work into the context of the spectrum of barriers to widespread deployment and adoption.

III. Relationship to PIER Goals

This project meets the PIER goal of <pick one from the list below> by <fill in the blank with how this goal will be met>. (If applicable, this project also meets the secondary PIER goal of <pick one from the list below> by <fill in the blank with how this goal will be met >.)

PIER Goals

1. Improving the Energy Cost/Value of California's Electricity
2. Improving the Environmental, Public Health, and Safety of California's Electricity
3. Improving the Reliability, Quality, and Sufficiency of California's Electricity
4. Addressing important RD&D gaps
5. Providing greater choices for California consumers
6. Connecting to near-term market applications

IV. Goals of the Agreement

At the beginning of this section, complete the following sentence. Please be succinct.

The goal of this project is to…(*Complete the sentence with a brief description of the goal(s) and how the goal(s) will be met. Goals can be technical, economic or social. Please be brief, two to three sentences maximum.*)

V. Objectives of the Agreement

The objectives of this project are to…(*Complete this sentence with the objectives, which are things that will be measurable or knowable at the end of **this** project. Bidders should determine performance measures that are applicable to their projects.)*

Examples of Performance Measures:

- . . .reduce the cost of electricity generation (or supply) by ____%.
- . . .increase the number of new technologies that are market-ready by ____<fill in the number>.
- . . . increase the adoption by the market of specific technologies by ___%.
- . . . increase the renewable technologies that are cost competitive by __%.
- . . . increase the new energy systems that can use multiple fuels by ____%.
- . . . decrease end-use consumption in specific energy sectors.
- . . . decrease the system impacts over current best practices by ____%.
- . . .increase the number of market-ready technologies that contribute to reduced risks of increased environmental/health impacts by ____<fill in the number>.
- . . .reduce the interruption frequency and duration per customer type per year by ____<fill in the number>.
- . . .increase the expected number of new technologies providing increased reliability/quality choices to consumers by ____<fill in the number>.
- . . .decrease the rates of injury and fatality associated with electricity generation/supply and usage by ____<fill in the number>.
- . . .determine the effectiveness of the XYZ process.

After completing the sentences above, discuss how and to what degree your proposed project contributes to technology improvement and market introduction and penetration in California.

VI. Task 1.0 Administration

Except for the optional Tasks 1.10, Establish the PAC (Project Advisory Committee), and 1.11, Conduct PAC Meetings, the administrative tasks must be included in every agreement and the language does not change. Do NOT write anything in these areas. In contrast, Tasks 1.10 and 1.11 can be modified as needed. If you have questions about the applicability of some of these tasks to your agreement, please ask.

VII. Technical Tasks (Tasks 2 through n)

This is the area in the Scope of Work where the technical work to be performed under this Agreement is set forth. The work effort should be divided into a series of logical, discrete and sequential tasks. Each task has the following components:

- Task Name
- The goal of this task is to . . .
- The Contractor shall:
- Deliverables

A. The Goal

The goal of this task is to . . .(Complete the sentence with a brief description of the goal(s). Please be brief, two to three sentences maximum.)

B. The Contractor shall

List each individual **activity** with a separate bullet and begin each bullet with a verb to complete the sentence beginning with "The Contractor shall." Organize activities in the order in which they will occur. A bullet needs to appear before each activity. Use this section to describe the essential elements of **the process** you will use to complete the project. The **contents** of each **deliverable** shall also be described in this section.

For Example:

The Contractor shall:

- Prepare the X Test Plan. This plan shall include, but not be limited to . . .
- Submit the X Test Plan to the Commission Contract Manager . . .
- Conduct research in accordance with the X Test Plan.
- Prepare the X Test Results Report. This report shall include, but not be limited to, the following . . .

(Please note the following:

- **If a project is for demonstration, or if a project involves testing**, one of the tasks should be Test Plan preparation. The Test Plan should include considerations such as the number of hours of operation, the type of monitoring to be preformed, the manner in which data will be validated, analyzed, and reported.)

C. Deliverables:

- 1st deliverable (name only)
- 2nd deliverable (name only)

Only the **names** of each deliverable shall appear in the "Deliverables" section. Use exactly the same name to identify a deliverable (report, data set, project plan, etc.) in the activity and in the list of deliverables. A bullet needs to appear before each deliverable.

Deliverables are products that incorporate the knowledge and understanding gained by performing the activities and that are submitted to the Commission for review, comment and approval. Deliverables include, but are not limited to, written reports that describe methods, test plans, results of testing, analysis of data, conclusions, and recommendations for future study, workshop agendas and summaries, description and photographs of equipment/product developed, summaries of advisory group meetings, computer software with written instructions for data input and use of the software, if intended for public or Commission use, and production prototypes. The sum of the deliverables should be sufficiently detailed to be of use to stakeholders and other researchers. The level of detail should be sufficient for an observer to assess whether the project objectives and goals have been successfully met.

D. Task n-2 Data Acquisition System and Benefits Data Reporting Requirements
This task must be apart of every project and budgeted for. The language does not change. Do NOT write anything in this area.

E. Task n-1 Technology Transfer Activities
If applicable, this section is included in the agreement. Change the language as appropriate for your project.

F. Task n Production Readiness Plan
If applicable, this section is included in the agreement. Change the language as appropriate for your project.

VIII. Examples of Different Types of Technical Deliverables *(These are examples, which you may modify for use in your project. You may create other deliverables as needed, but please adhere to the patterns shown.)*

1. Notification Letters

- Provide a Notification Letter regarding _____, to the Commission Contract Manager. *(Give it a unique name based on the content and the project.)* The letter shall include but not be limited to written documentation that the _____ is ready for *(testing, viewing, submission for certification, etc.*) and the date such (*testing, viewing, submission for certification, etc.)* shall begin, and shall include photographs.

Deliverables:

- Notification Letter regarding _____

2. Test Plans

- Prepare the _____Test Plan. *(Give it a unique name, such as the Site A Test Plan. Test plans and testing procedures should be described in detail including factors such as instrumentation, data collection, data analysis, statistical analyses, and performance curves. Test results shall include relationships among performance, efficiency, emissions, temperature, pressure and all other parameters that qualify and quantify the subject technology.)* The test plan shall include, but not be limited to:
  - a description of the process to be tested
  - the rationale for why the tests are required
  - predicted performance based on calculations or other analyses
  - test objectives and technical approach
  - a test matrix showing the number of test conditions and replicated runs
  - a description of the facilities, equipment, instrumentation required to conduct the tests
  - a description of test procedures, including parameters to be controlled and how they will be controlled; parameters to be measured and instrumentation to measure them; calibration procedures to be used; recommended calibration interval; and maintenance of the test log
  - a description of the data analysis procedures

- a description of quality assurance procedures
- contingency measures to be considered if the test objectives are not met
- (add additional bullets specific to the project as needed)

Deliverables:

- Draft _____ Test Plan
- Final _____ Test Plan

3. **Interim Reports** (*This applies to all deliverable reports. Examples include task and subtask reports, test reports, data sets, databases and computer model development or application. Monthly reports and the final report are treated separately as shown in the Scope of Work.)*

- Prepare the_____ Report *(Give it a unique name, such as the ABC Test Report or 123 Database. If an interim report is based on earlier work in this project, then the titles should relate to each other. After the title insert a description of the deliverable.)* This report shall include, but not be limited to, the following*: (List the elements of the report in separate bullets.)*

  For example, if the Interim Report is a Test Report, use the following description:

  The Test Report shall include, but not be limited to, the following:

  - the test plan
  - test results
  - analysis
  - conclusions
  - recommendations
  - photographs as appropriate.
  - (add additional bullets specific to the project as needed)

  For example, if the Interim Report is a Task or Subtask Report, use the following description:

  The Task or Subtask Report shall include, but not be limited to, the following:

  - the goal of the task or subtask;
  - the description of the approach used;
  - list of activities performed;
  - description of the results and to what degree the goal was achieved;
  - significant issues encountered and how they were addressed;
  - a discussion of the implications regarding the success or failure of the results, and the effect on the budget and the overall objectives of the project.
  - photographs as appropriate.
  - (add additional bullets specific to the project as needed)

Deliverables:

- Draft _____ Test (Task, Database, etc.) Report
- Final _____ Test (Task, Database, etc.) Report

4. Use this pattern for reports that will be discussed at a Critical Project Review.

- Prepare the draft _____(Report, Test Plan, etc). This document shall be submitted to the Commission Contract Manager in accordance with the procedure for Critical Project Reviews. This document shall include, but not be limited to the following: (Insert the appropriate bulleted items for either Test Plans in number 2 above or Reports in number 3 above.)

- Prepare the (1^{st}, 2^{nd}, etc) Critical Project Review Report.

- Participate in the (1^{st}, 2^{nd}, etc) Critical Project Review.

- Modify the draft _____(Report, Test Plan, etc) in accordance with comments received during the Critical Project Review. Once agreement has been reached on the draft, the Contractor shall submit the final deliverable to the Commission Contract Manager. The Commission Contract Manager shall provide written approval of the final deliverable within 10 working days of receipt. Key elements from this document shall be included in the Final Report for this project.

Deliverables:

- Draft _____ (Report, Test Plan, etc)
- (1^{st}, 2^{nd}, etc) Critical Project Review Report(s)
- Final _____ (Report, Test Plan, etc)

5. Bills of Materials or Equipment Lists

- Prepare a Bill of Materials (or Equipment List) for _____. *(Give it a unique name.)* This document shall include but not be limited to:
- a description of each item
- test protocols and codes applicable to each item
- cost estimates or bids for each item

Deliverables:

- Bill of Materials (or Equipment List) for_____

6. Site Selection (optionally, this language can be incorporated into a test plan)

- Determine Site Selection Details for the field test site, including but not limited to the following, and obtain contract manager approval:
- Type of site, i.e.

  --Residential

  -Specify type of dwelling: single family, multiple family including number of units, apartment, townhouse, etc.

  -Specify age of dwelling: new home construction, model home, existing home (indicate approximate age)

  --Commercial (specify warehouse, retail, office, etc.)

- Number of sites
- Location, i.e. climate zone, area, or city
- Timing of testing (i.e. season or month), length and frequency of testing
- Agreement with site owner, to addresses issues such as:
  --Details of test, including dates, length of test
  --Site owner input and feedback on test conditions
  --Access to site
  --Insurance and indemnity
  --Contingency if damages are caused by test
  --Equipment installation and removal
  Once the site is selected, Contractor shall enter into an agreement with the site owner and make a copy of the agreement available to contract manager upon request.

IX. Examples of Technical Tasks

Task 2 Develop EGR and Control System On Engine

The goal of this Task is to evaluate rich burn EGR engine performance with the pre-production hardware and control system for implementation of EGR on a VGF H24 engine.

The Contractor shall:

- Prepare the draft Rich Burn EGR Engine Test Plan. This test plan shall detail the performance evaluation of the rich burn EGR engine. The test plan shall include, but not be limited to, the following:
  - A description of the engine system
  - Rationale for conducting the tests
  - predicted performance based on calculations or other analyses
  - test objectives and technical approach
  - a test matrix showing the number of test conditions and replicated runs
  - a description of the facilities, equipment, instrumentation required to conduct the tests
  - a description of test procedures, including parameters to be controlled and how they will be controlled; parameters to be measured and instrumentation to measure them; calibration procedures to be used; recommended calibration interval; and maintenance of the test log
  - a description of the data analysis procedures
  - a description of quality assurance procedures
  - contingency measures to be considered if the test objectives are not met
- Conduct testing as outlined in the Rich Burn EGR Engine Test Plan. This testing shall map engine performance with respect to EGR and equivalence ratio effects on efficiency and emission.
- Prepare the draft Rich Burn EGR Performance Report. This document shall include, but not be limited to, the following:
  - the goal of the task or subtask;

- the description of the approach used;
- list of activities performed;
- description of the results and to what degree the goal was achieved;
- significant issues encountered and how they were addressed;
- a discussion of the implications regarding the success or failure of the results, and the effect on the budget and the overall objectives of the project.
- photographs as appropriate.

Deliverables:

- Draft Rich Burn EGR Engine Test Plan
- Final Rich Burn EGR Engine Test Plan
- Draft Rich Burn EGR Performance Report
- Final Rich Burn EGR Performance Report

Task 3 4000-Hour Field Test **(Note the use of the Critical Project Review)**

The goal of this Task is to demonstrate the performance of a rich burn EGR engine in a field environment. The field site will be located in California, and a three-way catalyst will be installed on the exhaust to reduce emissions below current California standards.

The Contractor shall:

- Prepare the draft 4000-Hour Field Test Plan. This test plan shall detail the field testing of the rich burn EGR engine at a California location. The test plan shall include, but not be limited to, the following:
  - A description of the engine system
  - Rationale for conducting the tests
  - predicted performance based on calculations or other analyses
  - test objectives and technical approach
  - a test matrix showing the number of test conditions and replicated runs
  - a description of the facilities, equipment, instrumentation required to conduct the tests
  - a description of test procedures, including parameters to be controlled and how they will be controlled; parameters to be measured and instrumentation to measure them; calibration procedures to be used; recommended calibration interval; and maintenance of the test log
  - a description of the data analysis procedures
  - a description of quality assurance procedures
  - contingency measures to be considered if the test objectives are not met
- Determine Site Selection Details for the field test site, including but not limited to the following, and obtain contract manager approval:
  - Type of site, i.e.
    --Residential
    -Specify type of dwelling: single family, multiple family including number of units, apartment, townhouse, etc.

-Specify age of dwelling: new home construction, model home, existing home (indicate approximate age)

--Commercial (specify warehouse, retail, office, etc.)

- Number of sites
- Location, i.e. climate zone, area, or city
- Timing of testing (i.e. season or month), length and frequency of testing
- Agreement with site owner, to addresses issues such as:
  --Details of test, including dates, length of test
  --Site owner input and feedback on test conditions
  --Access to site
  --Insurance and indemnity
  --Contingency if damages are caused by test
  --Equipment installation and removal
  Once the site is selected, Contractor shall enter into an agreement with the site owner and make a copy of the agreement available to contract manager upon request.

- Run engine break-in and power testing per standard engine test procedures at Jane Doe Engine.
- Run engine-generator system load testing per standard test procedures at Jane Doe Power Systems.
- Provide a Notification Letter regarding 4000-Hour Field Test, to the Commission Contract Manager. The letter shall include, but not be limited to, the following:
  - Written documentation that the 4000-Hour Field Test is ready for testing
  - The date testing shall begin
  - Photographs as appropriate
- Conduct testing as outlined in the 4000-Hour Field Test Plan. This testing will monitor engine performance and emissions over 4000-hours of operations.
- Prepare the draft 4000-Hour Field Test Report. This document shall be submitted to the Commission Contract Manager in accordance with the procedure for Critical Project Reviews. This document shall include, but not be limited to, the following:
  - the test plan
  - test results
  - analysis
  - conclusions
  - recommendations
  - photographs as appropriate.
- Prepare the 1st Critical Project Review Report.
- Participate in the 1st Critical Project Review.
- Modify the draft 4000-Hour Field Test Report in accordance with the comments received during the Critical Project Review. The final version of this document shall be submitted to the Commission Contract Manager within 10 working days after the Critical Project Review.

The Commission Contract Manager shall send written notification of approval to the Contractor within 2 working days after receipt. Key elements from this document shall be included in the Final Report for this project.

Deliverables:

- Draft 4000-Hour Field Test Plan
- Final 4000-Hour Field Test Plan
- Notification Letter regarding 4000-Hour Field Test
- Draft 4000-Hour Field Test Report
- 1st Critical Program Review Report
- Final 4000-Hour Field Test Report

RFP Attachment 8 (A)

Template for Completing Agreement Exhibit A, Scope of Work

GLOSSARY

Specific terms and acronyms used throughout this work statement are defined as follows:

Acronym	Definition
CPR	Critical Project Review
PAC	Project Advisory Committee
UCC.1	Uniform Commercial Code (Financing Statement)
	(*Insert additional rows as needed*.)

TECHNICAL TASK LIST

(*Insert the Task numbers and Task names for your Agreement. Put an "X" in the CPR column next to the Tasks that contain a Critical Project Review*).

Task #	CPR	Task Name
1	N/A	Administration
2		
3		
Etc.		
N-2		Data Acquisition System and Benefits Data Reporting Requirements
N-1	N/A	Technology Transfer Activities
N	N/A	Production Readiness Plan

KEY NAME LIST

(Insert the Task numbers and the Key names for each Task in your Project. Add additional lines as needed.)

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	<Name>	<Name>	<Name>
2	<Name>	<Name>	<Name>
3	<Name>	<Name>	<Name>
4	<Name>	<Name>	<Name>
N-1	<Name>	<Name>	<Name>
N	<Name>	<Name>	<Name>

Problem Statement
<please see instructions>

Relationship to PIER Goals
This Agreement meets the PIER Goal of … *<please see instructions>*

Goals of the Agreement
The goal of this Agreement is to … *<please see instructions>*

Objectives of the Agreement
The objectives of this Agreement are to… *<please see instructions>*

TASK 1.0 ADMINISTRATION

MEETINGS

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Contractor shall:

- Attend a "kick-off" meeting with the Commission Contract Manager, the Contracts Officer, and a representative of the Accounting Office. The Contractor shall bring their Project Manager, Contracts Officer, Accounting Officer, and others designated by the Commission Contract Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Contract Manager will provide an agenda to all potential meeting participants.

  The administrative portion of the meeting shall include, but not be limited to, the following:
  - Terms and conditions of the Agreement
  - CPRs (Task 1.2)
  - Match fund documentation (Task 1.7)
  - Permit documentation (Task 1.8)

  The technical portion of the meeting shall include, but not be limited to, the following:
  - The Commission Contract Manager's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Schedule of Deliverables
  - An updated Gantt chart
  - Progress Reports (Task 1.4)
  - Technical Deliverables (Task 1.5)
  - Final Report (Task 1.6)
  - Establish the PAC (Task 1.10) (optional)

- PAC Meetings (Task 1.11) (optional)

The Commission Contract Manager shall designate the date and location of this meeting.

Deliverables:
- An Updated Schedule of Deliverables
- An Updated Gantt Chart
- An Updated List of Match Funds
- An Updated List of Permits
- Schedule for Recruiting PAC Members (optional)

Task 1.2 CPR Meetings
The goal of this task is to determine if the project should continue to receive Commission funding to complete this Agreement and if it should, are there any modifications that need to be made to the tasks, deliverables, schedule or budget.

CPRs provide the opportunity for frank discussions between the Commission and the Contractor. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Commission Contract Manager and as shown in the Technical Task List above and in the Schedule of Deliverables. However, the Commission Contract Manager may schedule additional CPRs as necessary, and any additional costs will be borne by the Contractor.

Participants include the Commission Contract Manager and the Contractor, and may include the Commission Contracts Officer, the PIER Program Team Lead, other Commission staff and Management as well as other individuals selected by the Commission Contract Manager to provide support to the Commission.

The Commission Contract Manager shall:

- Determine the location, date and time of each CPR meeting with the Contractor. These meetings generally take place at the Commission, but they may take place at another location.

- Send the Contractor the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.

- Conduct and make a record of each CPR meeting. One of the outcomes of this meeting will be a schedule for providing the written determination described below.

- Determine whether to continue the project, and if continuing, whether or not to modify the tasks, schedule, deliverables and budget for the remainder of the Agreement, including not proceeding with one or more tasks. If the Commission Contract Manager concludes that satisfactory progress is not being made, this conclusion will be referred to the Commission's Research, Development and Demonstration Policy Committee for its concurrence.

- Provide the Contractor with a written determination in accordance with the schedule. The written response may include a requirement for the Contractor to revise one or more deliverable(s) that were included in the CPR.

The Contractor shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other deliverables identified in this Scope of Work. Submit these documents to the Commission Contract Manager and any other designated reviewers at least 15 working days in advance of each CPR meeting.

- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

Contractor Deliverables:
- CPR Report(s)
- CPR deliverables identified in the Scope of Work

Commission Contract Manager Deliverables:
- Agenda and a List of Expected Participants
- Schedule for Written Determination
- Written Determination

Task 1.3 Final Meeting
The goal of this task is to closeout this Agreement.

The Contractor shall:

- Meet with the Commission to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

  This meeting will be attended by, at a minimum, the Contractor, the Commission Contracts Officer, and the Commission Contract Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Contract Manager.

  The technical portion of the meeting shall present findings, conclusions, and recommended next steps (if any) for the Agreement. The Commission Contract Manager will determine the appropriate meeting participants.

  The administrative portion of the meeting shall be a discussion with the Commission Contract Manager and the Contracts Officer about the following Agreement closeout items:

    - What to do with any state-owned equipment (Options)

- Need to file UCC.1 form re: Commission's interest in patented technology
- Commission's request for specific "generated" data (not already provided in Agreement deliverables)
- Need to document Contractor's disclosure of "subject inventions" developed under the Agreement
- "Surviving" Agreement provisions, such as repayment provisions and confidential deliverables
- Final invoicing and release of retention

- Prepare a schedule for completing the closeout activities for this Agreement.

Deliverables:
- Written documentation of meeting agreements and all pertinent information
- Schedule for completing closeout activities

REPORTING

Task 1.4 Monthly Progress Reports
The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement.

The Contractor shall:

- Prepare progress reports which summarize all Agreement activities conducted by the Contractor for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Contract Manager within 5 working days after the end of the reporting period. Attachment A-1, Progress Report Format, provides the recommended specifications.
- Submit a copy of each monthly progress report to the U.S. Department of Energy contact listed in Task 1.5.

Deliverables:
- Monthly Progress Reports

Task 1.5 Test Plans, Technical Reports and Interim Deliverables
The goal of this task is to set forth the general requirements for submitting test plans, technical reports and other interim deliverables, unless described differently in the Technical Tasks.

The Contractor shall:

- Submit a draft of each deliverable listed in the Technical Tasks to the Commission Contract Manager for review and comment in accordance with the approved Schedule of Deliverables. The Commission Contract Manager will provide written comments back to the Contractor on the draft deliverable within 15 working days of receipt. Once agreement has been reached on the draft, the Contractor shall submit the final deliverable to the Commission Contract Manager. The Commission Contract Manager shall provide written approval of the final

deliverable within 10 working days of receipt. Key elements from this deliverable shall be included in the Final Report for this project.

- Submit an additional copy of each deliverable to U.S. Department of Energy contact:

  Garth P. Corey
  Sandia National Laboratories
  PO Box 5800 MS-0710
  Albuquerque, NM 87185-0710

Task 1.6 Final Report

The goal of this task is to prepare a comprehensive written Final Report that describes the original purpose, approach, results and conclusions of the work done under this Agreement. The Commission Contract Manager will review and approve the Final Report. The Final Report must be completed on or before the termination date of the Agreement. Attachment A-2, Final Report Format, provides the recommended specifications.

The Final Report shall be a public document. If the Contractor has obtained confidential status from the Commission and will be preparing a confidential version of the Final Report as well, the Contractor shall perform the following subtasks for both the public and confidential versions of the Final Report.

Task 1.6.1 Final Report Outline

The Contractor shall:

- Prepare a draft outline of the Final Report.

- Submit the draft outline of Final Report to the Commission Contract Manager for review and approval. Also submit a copy to the U.S. Department of Energy contact listed in Task 1.5. The Commission Contract Manager will provide written comments back to the Contractor on the draft outline within 5 working days of receipt. Once agreement has been reached on the draft, the Contractor shall submit the final outline to the Commission Contract Manager. The Commission Contract Manager shall provide written approval of the final outline within 2 working days of receipt.

Deliverables:

- Draft Outline of the Final Report
- Final Outline of the Final Report

Task 1.6.2 Final Report

The Contractor shall:

- Prepare the draft Final Report for this Agreement in accordance with the approved outline.

- Submit the draft Final Report to the Commission Contract Manager for review and comment.

Also submit a copy to the U.S. Department of Energy contact listed in Task 1.5. The Commission Contract Manager will provide written comments within 10 working days of receipt.

Once agreement on the draft Final Report has been reached, the Commission Contract Manager shall forward the electronic version of this report to the PIER Technology Transfer Group for final editing. Once final editing is completed, the Commission Contract Manager shall provide written approval to the Contractor within 2 working days.

- Submit one bound copy of the Final Report with the final invoice.

Deliverables:
- Draft Final Report
- Final Report

MATCH FUNDS, PERMITS, AND ELECTRONIC FILE FORMAT

Task 1.7 Identify and Obtain Matching Funds
The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. While the PIER budget for this task will be zero dollars, the Contractor may utilize match funds for this task. Match funds shall be spent concurrently or in advance of PIER funds during the term of this Agreement. Match funds must be identified in writing, and the associated commitments obtained before the Contractor can incur any costs for which the Contractor will request reimbursement.

The Contractor shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the Commission Contract Manager at least 2 working days prior to the kick-off meeting:

    1. If no match funds were part of the proposal that led to the Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter.

    2. If match funds were a part of the proposal that led to the Commission awarding this Agreement, then provide in the letter:

        - A list of the match funds that identifies the:
            - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied.

            - Amount of each in-kind contribution, a description, documented market or

book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Contractor shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located.

- A copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured.

- Discuss match funds and the implications to the Agreement if they are significantly reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.

- Provide the appropriate information to the Commission Contract Manager if during the course of the Agreement additional match funds are received.

- Notify the Commission Contract Manager within 5 working days if during the course of the Agreement existing match funds are reduced. Reduction in match funds may trigger an additional CPR.

Deliverables:
- A letter regarding Match Funds or stating that no Match Funds are provided
- Letter(s) for New Match Funds
- A copy of each Match Fund commitment letter
- Letter that Match Funds were Reduced (if applicable)

Task 1.8 Identify and Obtain Required Permits
The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. While the PIER budget for this task will be zero dollars, the Contractor shall show match funds for this task. Permits must be identified in writing and obtained before the Contractor can incur any costs related to the use of the permits for which the Contractor will request reimbursement.

The Contractor shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Contract Manager at least 2 working days prior to the kick-off meeting:

  1. If there are no permits required at the start of this Agreement, then state such in the letter.

  2. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:

    - A list of the permits that identifies the:
        - Type of permit
        - Name, address and telephone number of the permitting jurisdictions or lead agencies
    - Schedule the Contractor will follow in applying for and obtaining these permits

- The list of permits and the schedule for obtaining them will be discussed at the kick-off meeting, and a timetable for submitting the updated list, schedule and the copies of the permits will be developed. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the progress reports and will be a topic at CPR meetings.

- If during the course of the Agreement additional permits become necessary, then provide the appropriate information on each permit and an updated schedule to the Commission Contract Manager.

- As permits are obtained, send a copy of each approved permit to the Commission Contract Manager.

- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Contract Manager within 5 working days. Either of these events may trigger an additional CPR.

Deliverables:
- A letter documenting the Permits or stating that no Permits are required
- Updated list of Permits as they change during the Term of the Agreement
- Updated schedule for acquiring Permits as it changes during the Term of the Agreement
- A copy of each approved Permit

Task 1.9 Electronic File Format
The goal of this task is to unify the formats of electronic data and documents provided to the Commission as contract deliverables. Another goal is to establish the computer platforms, operating systems and software that will be required to review and approve all software deliverables.

The Contractor shall:

- Deliver documents to the Commission Contract Manager in the following formats:
    - Data sets shall be in Microsoft (MS) Access or MS Excel file format.
    - PC-based text documents shall be in MS Word file format.
    - Documents intended for public distribution shall be in PDF file format, with the native file format provided as well.
    - Project management documents shall be in MS Project file format.

- Request exemptions to the electronic file format in writing at least 90 days before the deliverable is submitted.

Deliverables:
- A letter requesting exemption from the Electronic File Format (if applicable)

PAC (Optional)

Task 1.10 Establish the PAC

The goal of this task is to create an advisory committee for this Agreement.

The PAC should be composed of diverse professionals. The number can vary depending on potential interest and time availability. The Contractor's Project Manager and the Commission Contract Manager shall act as co-chairs of the PAC. The exact composition of the PAC may change as the need warrants. PAC members serve at the discretion of the Commission Contract Manager.

The PAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter
- Members of the trades who will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives)
- Public Interest Market Transformation Implementers
- Product Developers relevant to project subject matter
- U.S. Department of Energy Research Manager
- Public Interest Environmental Groups
- Utility Representatives
- Members of the relevant technical society committees

The purpose of the PAC is to:

- Provide guidance in research direction. The guidance may include scope of research; research methodologies; timing; coordination with other research. The guidance may be based on:

  -technical area expertise
  -knowledge of market applications
  -linkages between the contract work and other past, present or future research (both public and private sectors) they are aware of in a particular area

- Review deliverables. Provide specific suggestions and recommendations for needed adjustments, refinements, or enhancement of the deliverables.
- Evaluate tangible benefits to California of this research and provide recommendations, as needed, to enhance tangible benefits.

- Provide recommendations regarding information dissemination, market pathways or commercialization strategies relevant to the research products.

The Contractor shall:

- Prepare a draft list of potential PAC members that includes name, company, physical and electronic address, and phone number and submit it to the Commission Contract Manager at least 2 working days prior to the kick-off meeting. This list will be discussed at the kick-off meeting and a schedule for recruiting members and holding the first PAC meeting will be developed.
- Recruit PAC members and ensure that each individual understands the member obligations described below, as well as the meeting schedule outlined in Task 1.11.
- Prepare the final list of PAC members.
- Submit letters of acceptance or other comparable documentation of commitment for each PAC member.

Deliverables:

- Draft List of PAC Members
- Final List of PAC Members
- Letters of acceptance, or other comparable documentation of commitment for each PAC Member

Task 1.11 Conduct PAC Meetings

The goal of this task is for the PAC to provide strategic guidance to this project by participating in regular meetings or teleconferences.

The Contractor shall:

- Discuss the PAC meeting schedule at the kick-off meeting. The number of face-to-face meetings and teleconferences and the location of PAC meetings shall be determined in consultation with the Commission Contract Manager. This draft schedule shall be presented to the PAC members during recruiting and finalized at the first PAC meeting.
- Organize and lead PAC meetings in accordance with the schedule. Changes to the schedule must be pre-approved in writing by the Commission Contract Manager.
- Prepare PAC meeting agenda(s) with back-up materials for agenda items.
- Prepare PAC meeting summaries, including recommended resolution of major PAC issues.

Deliverables:

- Draft PAC Meeting Schedule
- Final PAC Meeting Schedule
- PAC Meeting Agenda(s) with Back-up Materials for Agenda Items
- Written PAC meeting summaries, including recommended resolution of major PAC issues

TECHNICAL TASKS

Unless otherwise provided in the individual Task, the Contractor shall prepare and submit all deliverables in accordance with the requirements in Task 1.5, including the submission of an additional copy to the U.S. Department of Energy contact that is listed in Task 1.5.

Task 2 (insert task name)

The goal of this task is to . . .(*Complete the sentence with a brief description of the goal(s). Please be brief, two to three sentences maximum*. *<please see instructions>*)

The Contractor shall:

- *(Insert verb in active tense) . . . (Complete the sentence.)*
- *(Insert verb in active tense) . . . (Complete the sentence.)*

Etc. *<please see instructions>*

Deliverables:

- 1st deliverable (name only)
- 2nd deliverable (name only)

Etc. *<please see instructions>*

Task 3 (insert task name)

The goal of this task is to . . .(*Complete the sentence with a brief description of the goal(s). Please be brief, two to three sentences maximum*. *<please see instructions>*)

The Contractor shall:

- *(Insert verb in active tense) . . . (Complete the sentence.)*
- *(Insert verb in active tense) . . . (Complete the sentence.)*

Etc. *<please see instructions>*

Deliverables:

- 1st deliverable (name only)
- 2nd deliverable (name only)

Etc.*<please see instructions>*

(add the appropriate number of tasks for your Agreement)

Task n-2 Data Acquisition System and Benefits Data Reporting Requirements

The goal of this task is to provide system level operation and performance information, including economic performance information, about this project to the public. This goal will be achieved through the use of a Data Acquisition System (DAS) and additional reporting requirements to the standard PIER reporting requirements contained in Administrative Tasks 1.4 and 1.6 and Agreement Attachments A-1 and A-2.

The Contractor shall:

- Prepare a DAS Implementation Plan. This plan shall include, but not be limited to, the following:
  - A method for providing secure communications capabilities for remote access and uploading of daily operational data to a central data collection site assigned responsibility for Data Management activities under a separate contract issued by DOE.
  - Characteristics of the selected DAS, which must at a minimum record the following:
    - Events that result in a change of system operational mode,
    - Demonstration system response times to changes in operating conditions,
    - Energy and power into and out of the EES demonstration system, for each AC phase in the system,
    - System load,
    - System duty cycle count,
    - System Failures/Problems,
    - Electrical performance of the Power Conditioning System.

    Further, the DAS shall accommodate at least 365 days of data, and all data shall be time stamped with resolution to 1 millisecond.
  - Any flowcharts and operating manuals for the DAS.
  - Method for obtaining historical utility system performance data. Utility system performance data prior to the installation of the demonstration system is required in order to provide credible baseline data on electrical system performance before and after the installation of the demonstration system. This data shall include, but not be limited to, load profiles, peaks, overloads, faults, power quality events, and any other information required to fully characterize the operation of the electrical utility at the demonstration site prior to installation of the demonstration system.

- Procure a DAS system according to the approved DAS Implementation Plan. *<it is recommended that all equipment purchases come from match funding>*

- Prepare a DAS System Test Plan. This test plan shall include, but not be limited to:
  - a description of the process to be tested
  - the rationale for why the tests are required
  - predicted performance based on calculations or other analyses
  - test objectives and technical approach
  - a test matrix showing the number of test conditions and replicated runs
  - a description of the facilities, equipment, instrumentation required to conduct the tests
  - a description of test procedures, including parameters to be controlled and how they will be controlled; parameters to be measured and instrumentation to measure them; calibration procedures to be used; recommended calibration interval; and maintenance of the test log
  - a description of the data analysis procedures
  - a description of quality assurance procedures
  - contingency measures to be considered if the test objectives are not met

- Build and test the DAS system according to the approved DAS System Test Plan.

- Prepare a DAS System Test Report. The Test Report shall include, but not be limited to, the following:
  - test results
  - analysis
  - conclusions
  - recommendations
  - photographs as appropriate.

- Collect historical utility system performance data according to the approved DAS Implementation Plan for a time period of at least six months prior to system commissioning.

- Run and manage the DAS.

- Provide a secure access to data collected by the DAS that allows daily uploading of operational data to a central site. Protocols for supporting this remote data upload requirement shall be coordinated with the DOE's Data Management Contractor prior to the implementation of the system to insure standard communications protocol is used to fulfill this requirement. All data shall be time stamped with resolution to 1 millisecond.

- Prepare DAS operational summary information each month, and include this information in the Monthly Progress Reports described in Administrative Task 1.4. This information shall include, but not be limited to, the following:
  - A written summary of the economic benefit derived for the month
  - A written summary of all operations and maintenance activities for the month
  - System dispatch information and use patterns associated with the project
  - Energy consumption breakdown of parasitic loads introduced by the demonstration system
  - System performance under typical utility fault conditions (e.g. lightning strikes)
  - System performance under user fault conditions (e.g. fault in customer plant)
  - System reliability, failure rates, and performance summary
  - Utility system operational data after installation of the demonstration system
  - A comparison, after the 2-month anniversary of system commissioning, of DAS data to the historical utility system performance data collected in this Task.

- Prepare benefits data information, and include this information on a quarterly basis in the Monthly Progress Reports described in Administrative Task 1.4. This information should be sufficient to demonstrate the economic benefits defined in the original proposal.

- Prepare Annual DAS Reports. These reports shall consolidate all the monthly DAS operational summary information and the quarterly benefits data information and summarize the operation of the system for the preceding year.

Deliverables:
- Draft DAS Implementation Plan
- Final DAS Implementation Plan
- Draft DAS System Test Plan
- Final DAS System Test Plan
- Draft DAS System Test Report
- Final DAS System Test Report
- Draft Annual DAS Reports
- Final Annual DAS Reports

Task n-1 Technology Transfer Activities *(If applicable)*
The goal of this task is to develop a plan to make the knowledge gained, experimental results and lessons learned available to key decision-makers.

The Contractor shall:
- Prepare a Technology Transfer Plan. The plan shall explain how the knowledge gained in this project will be made available to the public. The level of detail expected is least for research-related projects and highest for demonstration projects. Key elements from this report shall be included in the Final Report for this project.

- Conduct technology transfer activities in accordance with the Technology Transfer Plan. These activities shall be reported in the Monthly Progress Reports.

Deliverables:
- Draft Technology Transfer Plan
- Final Technology Transfer Plan

Task n Production Readiness Plan *(If applicable)*
The goal of the plan is to determine the steps that will lead to the manufacturing of the technologies developed in this project or to the commercialization of the project's results.

The Contractor shall:
- Prepare a Production Readiness Plan. The degree of detail in the Production Readiness Plan discussion should be proportional to the complexity of producing or commercializing the proposed product and its state of development. The plan shall include, as appropriate, but not be limited to:
  - Identification of critical production processes, equipment, facilities, personnel resources, and support systems that will be needed to produce a commercially viable product;
  - Internal manufacturing facilities, as well as supplier technologies, capacity constraints imposed by the design under consideration, identification of design critical elements and the use of hazardous or non-recyclable materials. The product manufacturing effort may include "proof of production processes;"
  - A projected "should cost" for the product when in production;
  - The expected investment threshold to launch the commercial product;
  - An implementation plan to ramp up to full production.

Deliverables:

- Draft Production Readiness Plan
- Final Production Readiness Plan

RFP Attachment 8 (A-1)

Content and Format of Progress Reports

PROGRESS REPORT for
Project Title, Contract Number
Month, Year
Contractor Project Manager:
Commission Project Manager:

What we planned to accomplish this period
[This is taken directly from the section on "What we expect to accomplish during the next period" from the last progress report]

What we actually accomplished this period
[Concise description of major activities and accomplishments.]

How we are doing compared to our plan
[Explain the differences, if any, between the planned and the actual accomplishments. Describe what needs to be done, if anything, to get back on track.]

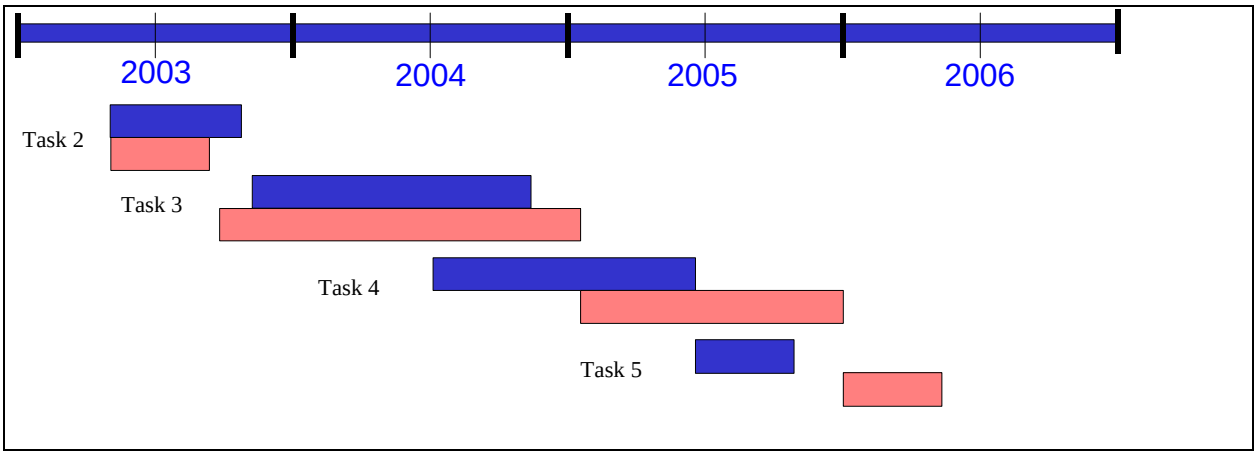
Significant problems or changes
[Describe any significant technical or fiscal problems. Request approval for significant changes in work scope, revised milestone due dates, changes in key personnel assigned to the project, or reallocation of budget cost categories. If none, include the following statement: "Progress and expenditures will result in project being completed on time and within budget."]

What we expect to accomplish during the next period
[Concise description of major activities and accomplishments expected. This will be transferred to the next progress report]]

Status of Milestones and Deliverables:

[This should be the complete list as contained in the revised scope of work and Exhibit B. Highlight differences between actual and planned.]

Description	Start Date		Due Date		Status (%)
	Planned	Actual	Planned	Actual	
Identify top 3 assessment candidates	4/15/12	4/15/12	5/1/12	5/1/12	Ontime 100%
Develop test plan	4/20/12	**4/10/12**	7/7/12	**6/10/12**	**Ahead 100%**
Analyze experimental data	5/1/12	**6/1/12**	1/1/13	**2/1/13**	**Delayed 25%**



Overall schedule for the _____ project.
[Planned is solid blue, actual is red striped. This work flow diagram needs to correlate with the schedule in Exhibit B. This example has been prepared as a Word Picture, but a comparable Excel diagram or Gantt chart is fine.]

Overview of Fiscal Status: (See invoices for detail.)
[It is useful to track the rate of expenditure of project funds. The most useful way to do this is to compare the actual expenditure rate with the planned expenditure rate. You get the planned rate at the beginning of the project, so it becomes a baseline. If you change course at a critical project review, you should show the original and the modified baseline, and then track against the new one.]

Photographs:
Include photographs where appropriate to document progress. The photos shall be shot with color print film or be very high quality digital photos (at least 300 dpi).]

Evidence of Progress:
If there is a long time between interim deliverables, then attach evidence of the progress being made (e.g., test data, product mock-ups, field site descriptions, preliminary analyses) to the Progress Reports to allow the Commission Contract Manager to review contract progress and gauge the quality of research results.

Notes:
The tracking for tasks and money is generally done at the major task level, but this depends on the project and fiscal controls.

Notice that there is no technical detail in these reports. This should come in specific deliverables so that critical project management information doesn't get lost. If the contractor is reporting monthly, but submitting invoices quarterly, then use the three monthly reports as an equivalent quarterly report. Don't make them write another report just to get paid.

The progress report on each project should be 1-2 pages long (plus photographs) and take about 1 hour to prepare for each reporting period.

RFP Attachment 8 (A-2)

Final Report Instructions

Process

1. Please contact Susan Patterson (916) 654-4992, spatters@energy.state.ca.us of the PIER Technology Transfer Group before preparing the outline of your final report. She will explain the process and go over any questions you have. It is best if both the Contractor and the Commission Contract Manager participate in this discussion.

2. Please use the MS Office Suite for your final reports. The version currently in use at the Commission is "97" operating on Windows 98. Please let us know if significant portions of the report will be in other programs.

3. When the Contractor and the Commission Contract Manager have agreed to the Draft Final Report, the Commission Contract Manager forwards the electronic report file(s) to Susan Patterson.

4. Susan forwards these electronic report file(s)to Heather Roberts, the SAIC Editing Coordinator, and to Julie Talbert, who will log the report into the Technology Transfer Group's work order system (internal e-mail address: ***Tech Trans***) for tracking purposes.

5. Julie requests a publication number from Business Services and provides it to Susan and Heather

6. In about a week, Heather will schedule a teleconference with the Commission Contract Manager, the report's author, and Susan Patterson. The day before the teleconference, Heather will send all teleconference participants a PDF version of the report and a list of the sections to discuss and resolve in the teleconference (i.e., Executive Summary, Objectives, Outcomes, Conclusions, Benefits to California, Recommendations, Abstract).

7. During the teleconference, which is scheduled for two hours but usually takes less, the participants will walk through the Executive Summary to ensure that the goals, objectives, outcomes, conclusions and recommendations of the project are presented in a consistent and intelligible fashion. The Executive Summary is the primary focus of the teleconference. Editorial and format changes for the entire report will be discussed and agreed upon by all participants. We will also identify any missing elements and who is responsible for filling them. Before concluding the teleconference, the participants will develop a schedule for completing the edits to the report.

8. SAIC is responsible for collecting and incorporating all missing elements and comments into the Final Report. Typically this takes place during the week following the teleconference, but may take longer, depending on the schedule developed during the teleconference.

9. When the edits are complete, SAIC will notify all participants that the report is posted on **SAIC's PIER Website** ***http://pier.saic.com*** and is available for a final review by all.

10. If there are additional changes, those should be brought to Heather's attention directly with a "cc:" to all of the participants in the teleconference. Once the report is agreeable to all, the Commission Contract Manager will send written approval to the Contractor, who will submit 1 bound copy with their final invoice. At the same time, the Commission Contract Manager will notify Heather, who will send Susan 1 unbound master copy and forward the approved PDF to Bob Aldrich in the Commission's Media and Public Communications Office for posting on the Commission's PIER Website.

Preparing technically accurate and internally consistent reports

1. Put on the hat of an inquisitive, reasonably well-educated lay reader. Pretend that they just paid for this research project and they want to understand how and why you spent their money.
2. Apply the test of completeness. Are all the pieces there? Are all the references clear and do those in the text match those in the reference section? Are the relationships between the partners and the players clearly explained?
3. Apply the test of logic. Does the document flow and make sense? Is the need for the research clearly described? Is the technical approach clearly described? Do the conclusions make sense? Are they drawn from the analysis? Do the numbers check? Is it clear how the numbers were derived?
4. If the project didn't do everything it intended to do, explain.
5. The final report must primarily address the contract work statement. Doing this will help manage the scope and the effort required for this report. A) Some research projects are Stage X (e.g. one stage of stages and gates) of a longer-term program and all work done during the time the Commission was involved was funded by all of the partners. B) In other cases, the work being done in this Stage of the program had more tasks than the Commission participated in, although some of the results of this work may have impacted, or been impacted by the other tasks. The Commission funded portion of the research project (or program) needs to be clearly differentiated from the overall program of which this portion of the research is a part. Comments about the program should not be intermingled with those about the project.
6. The objectives of the research project need to be clearly stated. The objectives of the Commission funded research project need to be clearly differentiated from the objectives of the overall program of which the research is a part. The objectives of the program should not be intermingled with the objectives of the project. If some objectives of the program will be performed elsewhere, or at another time, this needs to be explained. The report should then stay focused on the objectives of this project.
7. There needs to be a clear relationship between the objectives and the outcomes. The outcomes of the Commission funded research project need to be clearly differentiated from the outcomes of the overall program of which the research is a part. The outcomes of the program should not be intermingled with the outcomes of the project.
8. The methods used to conduct the research need to be explained.
9. Data that is presented in the report needs to be analyzed. If you present a picture, graph or table, be sure that you discuss it in the text, not just refer to it.
10. Each conclusion needs to be substantiated by the analysis contained in the report.
11. Figures and Tables must clearly relate to, and be consistent with the text, and vice versa. (If the text says the generator had a capacity of 30 kW, the table shouldn't say it was 31.2 kW.)
12. Use consistent references to report performance specifications and results. For example, if a piece of equipment is to be referred to by its nominal nameplate rating then use that reference consistently throughout the report. If however the desired number was the measured performance of the device, (almost always different from nameplate) then consistently use that measured number. Do not mix the two in the narrative.
13. The text needs to clearly refer to the attached appendices. It should also explain how the data in the appendices matters to the text. If it doesn't really matter, it probably should be dropped. (You may still need it because it is a deliverable according to the contract, so check this carefully.) References to multi-page appendices need to be specific to the page or section of the appendix, not just a general reference to Appendix X.

Final Report Contents

PIER Final Reports contain the following sections:

Cover Page and Title Page
Legal Notice
Acknowledgement Page
Table of Contents
Preface
Executive Summary
Abstract
Introduction
Project Approach
Project Outcomes
Conclusions and Recommendations
Endnotes
References
Glossary
Appendices
Attachments

Cover Page and Title Page

Please create one page with the following information. It will be used to create the cover and title pages.

- Title of the Report
- Name of primary author(s) or principal investigator
- Author's company, organization or affiliation
- Location of author's company, organization or affiliation (City, State)
- Name of Energy Commission Project Manager
- PIER Program Area
- PIER Program Area Lead
- Contract Number
- Amount of Contract (Total including amendments.)
- Publication Number (Ask Susan Patterson, (916) 654-4992 for this number.)
- Publication Date (Month and Year. Verify with Susan Patterson.)

Legal Notice

Use the following notice:

Legal Notice

This report was prepared as a result of work sponsored by the California Energy Commission (Commission, Energy Commission). It does not necessarily represent the views of the Commission, its employees, or the State of California. The Commission, the State of California, its employees, contractors, and subcontractors make no warranty, express or implied, and assume no legal liability for the information in this report; nor does any party represent that the use of this information will not infringe upon privately owned rights. This report has not been approved or disapproved by the Commission nor has the Commission passed upon the accuracy or adequacy of this information in this report.

NOTE: The abbreviation "CEC" is not allowed in final reports. Chose either Commission or Energy Commission throughout the report. Be consistent with one of the choices, and use it throughout the report.

Acknowledgement Page

This is the place for the author or principal investigator to acknowledge or express appreciation to those who participated in the project. This may be a paragraph, or a list of names, and if appropriate their affiliations.

Table of Contents

Sections to be included in the Table of Contents are as follows:

Preface

Executive Summary

Abstract

1. Introduction
   - Background and Overview (Why this project was necessary)
   - Project Objectives (What you planned to accomplish)
   - Report Organization

2. Project Approach (What you did to accomplish your objectives)

3. Project Outcomes (What happened)

4. Conclusions and Recommendations
   - Conclusions (What you learned from what happened)
   - Commercialization Potential
   - Recommendations (What you think should occur next)
   - Benefits to California

Endnotes

References

Glossary

List of Figures

List of Tables

Appendix A—All technical papers, articles, and presentations

Appendices B thru x

Attachments

Preface

Fill in the contract name, contract number, report title, organization, and research area, and numbers in the second to the last paragraph. Use the following Preface:

Preface

The Public Interest Energy Research (PIER) Program supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

The PIER Program, managed by the California Energy Commission (Commission), annually awards up to $62 million to conduct the most promising public interest energy research by partnering with Research, Development, and Demonstration (RD&D) organizations, including individuals, businesses, utilities, and public or private research institutions.

PIER funding efforts are focused on the following six RD&D program areas:

- Buildings End-Use Energy Efficiency
- Industrial/Agricultural/Water End-Use Energy Efficiency
- Renewable Energy
- Environmentally-Preferred Advanced Generation
- Energy-Related Environmental Research
- Strategic Energy Research.

What follows is the final report for the **[Contract Name,] [Contract Number,]** conducted by the **[Company/Organization/Affiliation]**. The report is entitled **[Report Title]**. This project contributes to the **[PIER Program Area]** program.

For more information on the PIER Program, please visit the Commission's Web site at: http://www.energy.ca.gov/research/index.html or contact the Commission's Publications Unit at 916-654-5200.

Executive Summary

A final report in miniature, containing all key information. Summarizes the introduction, purpose, project objectives, project outcomes, conclusions, recommendations and Benefits to California. It is intended to be short, bullet formatting is suggested. Assume a non-technical, management-level readership. You may want to write this as if you will hand it out at a trade show. Emphasize the benefits of the project and include who should care and why. Put on the hat of an inquisitive, reasonably well-educated lay reader who may be interested in purchasing or implementing the subject technology. Pretend that they just paid for this research project and they want to understand how and why you spent their money.

If your project has more than one project, repeat this organization for each project area. The Executive Summary needs to summarize the report, not present new information found nowhere else in the document. Go the Commission web site for further examples.

Abstract

This section should be the technical counterpart to the executive summary. Less marketing and sales oriented than the Executive Summary. This should be similar to what you would find in a technical trade periodical. Limited to 250 words, essentially a very brief, Executive Summary. The Abstract covers the

purpose, objectives, outcomes and conclusions. Contains 5-10 keywords for computer searches. Geared toward a more technical audience.

Introduction

- Background and Overview (Why this project was necessary) - Provide relevant background, identify this project's subject area and the goals of this research. Use Stages and Gates terminology, where appropriate, to identify what stage the project has reached in its path to market. Refer to the contract for this information.
- Project Objectives (What you planned to accomplish) - Present the technical and economic objectives for your project. The objectives need to contain the way(s) to measure or know the success of having reached the objective. Use Stages and Gates terminology where appropriate. These should be taken from the contract and should reflect any changes made during critical project reviews or at other times during the course of the project. (Describe why these changes were made in the Project Approach section.)

  Each objective shall be separately identified, a useful form is:

  Project objectives were to:
  - Verify (an action verb followed by relevant text)….
  - Determine….
  - Measure…
  - Develop….
- Report Organization – Provides a roadmap to the rest of the report. If there are separate final reports for a multitasked project, set the context in Background section and refer the reader to their location here.

Project Approach

This section discusses the tasks you undertook and your approach to the research (What you did to accomplish your objectives). Discuss the testing procedures you undertook and the system modifications and improvements you made.

Project Outcomes

This is where you present your results (What happened). Organize this section so that results are presented in the same order as the objectives. A short version of each Outcome should be stated in bullet form. Supporting paragraphs that describe each Outcome should follow each bullet.

There can be more Outcomes than there were Objectives. For example, there may be more than one Outcome per Objective. It is also possible to have an unanticipated Outcome during your research. However, you can not have stranded objectives; all Objectives, whether met or not, must be discussed in this section. If this section is particularly long, then it is useful to create a summary at the end of this section where all of the bullets are drawn together as a summary.

Conclusions and Recommendations

- Conclusions (What you learned from what happened) - Organize the Conclusions in the same order as Objectives and Outcomes. You may have Conclusions that are broader than individual Objectives and Outcomes. Please present these after you present the individual Conclusions. Conclusions must be drawn from evidence presented in the report.

- Commercialization Potential - This is where you should directly address stages and gates. Explain where your project is in stages and gates. If your project had a task to prepare a Production Readiness Plan or a similar effort related to assessing where the research is in relationship to being used in its relevant markets (i.e. Stages and Gates), this is the place to discuss that task.

- Recommendations (What you think should occur next) - Recommendations should derive from the Conclusions presented. Recommendations specific to individual Objectives, Outcomes and Conclusions should be presented in the original order. General Recommendations should follow. Use Stages and Gates terminology where appropriate. What is the next stage for this project?

- Benefits to California - This section discussed two issues: (1) what benefits has California already received from this contract, if applicable, and (2) if this project is successful and the results widely used, how will California benefit. These benefits need to be related to the problems this research was intended to address. Refer to the Introduction section of the report.

Endnotes

Endnotes are preferred to footnotes.

Glossary

If there are more than 10 acronyms then a glossary with definitions for each acronym should be provided at the end of the report.

References

This is where you list all documents referred to in the body of the report. List references in standard bibliographic format. Be sure to check that shorthand references contained in the body of the report are accurate. Any documents referred to in the Appendices should be listed in the reference section in the appropriate Appendix.

Appendices

Designated by Roman numerals.

Attachments

If absolutely required, designated by Roman numerals.

RFP Attachment 8 (B)

Instructions
for Agreement Exhibit B, Schedule of Deliverables and the Gantt Chart

A. Schedule of Deliverables and Due Dates (Tab: Att. B Schedule)

For each Administrative Task, insert the planned start and completion dates. Please note that it will take approximately two months from the date that you complete and turn in these forms to Sparkey until there is a final, approved agreement. Thus, pick a start date, accordingly. This will prevent having to re-do both the Schedule and Gantt Chart.

For each Technical Task, insert in the appropriate columns, the name of the task, the name of the deliverables associated with each task, and the planned start and completion dates. Delete or add lines as necessary. Because the task names (up to number 20) are linked with the budget forms, once they are typed onto the Schedule, they will carry forward to the budgets. If your project contains more than 20 tasks, you will have to link the additional cells or type them in the budget forms.

The Critical Project Reviews are only shown for example purposes. Delete the examples and place them in the appropriate places for your project.

Do not insert any information in the columns labeled "PIER Funds" and "Match Funds." These cells are linked to the budget forms and will automatically fill in once the budget forms are complete.

B. Gantt Chart (Tab: Att. B Gantt)

For each Task, graph the planned start and completion dates as listed on the Schedule of Deliverables and Due Dates. Add and delete lines as necessary, and use gray shading (for ease in black&white copying).

Modify the years to accommodate the time frames for your project. Because the months are divided into 1/4 increments, the Gantt chart can be accurate to the nearest week.

The chart has been pre-set to print as a single, landscape sheet. Please keep it that way.

If you have alternate means of creating a Gantt Chart (such as Microsoft Project), then you may use it. However, please make it print one landscape sheet.

Instructions

I. General Instructions for Completing the Spreadsheets in this Workbook

This workbook contains spreadsheets for the Schedule of Deliverables and Due Dates, Gantt Chart, budget forms for the prime contractor and key subcontractors, and a List of Contacts. Specific instructions for each of the spreadsheets in this workbook are below.

The electronic version of these documents shows cells of different color. Fill in only the non-colored cells for each of the spreadsheets. Do NOT enter data in the blue cells. Blue cells contain formulas or data transferred from other spreadsheets. Blue cells and many of the yellow cells (headings) are protected to prevent accidental changes. However, there is no password, so if you are experienced with Excel and need to make changes you can do so.

II. Instructions for Attachment B, Schedule of Deliverables and the Gantt Chart

A. Schedule of Deliverables and Due Dates (Tab: Att. B Schedule)

For each Administrative Task, insert the planned start and completion dates. Please note that it will take approximately two months from the date that you complete and turn in these forms to Sparkey until there is a final, approved agreement. Thus, pick a start date, accordingly. This will prevent having to re-do both the Schedule and Gantt Chart.

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Modify the years to accommodate the time frames for your project. Because the months are divided into 1/4 increments, the Gantt chart can be accurate to the nearest week.

The chart has been pre-set to print as a single, landscape sheet. Please keep it that way.

Instructions
for Agreement Exhibit C, the Budget Forms

The Prime Contractor and Key Subcontractors must submit information on all the Exhibit B Budget forms. (A "Key" Subcontractor is one that receives either 25% or $100,000 or more of PIER funds. "Minor" Subcontractors, i.e., those either receiving less than 25% or less than $100,000 of PIER funds, do not need to provide detailed budget spreadsheets.)

For each person or job classification, first list their current hourly rate in the "Current Hourly Rate ($)" column. In the remaining columns, enter the rates for the entire term of the Agreement, as shown on the Std. 213. Projected rates are acceptable and expected, average rates are not acceptable. Providing hourly rate ranges (e.g. $50 - $75) for a given period of time is also acceptable. If awarded an Agreement, the rates in your proposal become part of the signed Agreement and may not be changed. Thus, you cannot bill for more than the rate or the top of the rate range provided for the given period of time.

THE RATES INDENTIFIED IN YOUR BUGET BECOME PART OF THE CONTRACT AND MAY NOT BE CHANGED. YOU MAY PROVIDE A SALARY RATE OR RANGE BY NAME OR CLASSIFICATION. THE SALARY RATE IS CAPPED, THE TOP OF EACH RANGE IS CAPPED FOR REIMBURSEMENT BY THE COMMISSION. THE COMMISSION WILL REIMBURSE ONLY ACTUAL COSTS WITHIN THE CAPPED RATE OR RANGE. AVERAGE RATES ARE NOT ACCEPTABLE.

Except as provided for in the contract, Contractor shall use the Federal OMB Circulars A-87, A-21, A-122 or FAR Part 31 in determining allowable and unallowable costs.

A. Budget Summary (Tab: Exh C Summary)

Do **not** enter any data in this spreadsheet. These are the total task budgets, and the amounts will automatically fill in once information is entered on the individual task budgets.

B. PIER Budget (Tabs: Exh C Prime PIER, Exh C Sub#1 PIER, etc. if more than one key subcontractor)

Generally, fill in the PIER reimbursable amounts for each Task.

Rows

For Task 1.1, Kick-off Meeting, and Task 1.3, Final Meeting, budget for the number of technical and administrative personnel who will be attending the meeting with PIER staff in Sacramento.

Tasks 1.5, Test Plans, Technical Reports and Interim Deliverables, and 1.9, Electronic File Format, do not require funding, which is why the budgets for these tasks are listed as zero.

Tasks 1.7, Identify and Obtain Matching Funds, and 1.8, Identify and Obtain Required Permits, are not reimbursable with PIER funds. Match funds must be used for them.

For Task 1.6, the Final Report, budget for 1 month for your top technical person and/or best technical writer.

Columns

For all columns under Project Operating Expenses each project operating expense should include, if applicable, direct overhead.

For any amounts listed in the "Travel" column, for any amounts over $5,000 listed in the "Equipment" column, and for totals over $5,000 in either of the columns "Materials" and "Miscellaneous", both the Prime Contractor and Key Subcontractors must provide details of these expenditures on the corresponding tables in the worksheet with the tab labeled "Exh. B Travel & Equipment."

Do not fill in the column "Key Subcontractors." This information will fill in automatically from their budget forms.

Regarding the column "Profit," the Prime Contractor cannot derive profit on subcontractor invoices, and profit cannot exceed 10% of the PIER funds allocated to the Task. For Subcontractors, profit is not allowed on sub-subcontractor invoices, and profit cannot exceed 10% of the PIER funds allocated to the Task.

Each of the columns making up the "Project Operating Expenses" should include, if applicable, direct overhead.

C. Match Budget (Tabs: Exh C Prime-Match, Exh C Sub#1 Match, etc. if more than one key subcontractor)

Fill in the amounts of match funding in each of the cells except for the rows of Task 1.5 and 1.9 and for the column "Key Subcontractors." Tasks 1.5 and 1.9 do not have any expenses associated with them, and the Key Subcontractor column is calculated from other budget worksheets.

D. Personnel Hourly Rates and Benefits (Tabs: Exh C Prime Rates, Exh C Sub#1 Rates, etc. if more than one key subcontractor)

In the first two columns, list the names and job classifications for everyone from the Prime Contractor (or Key Subcontractor on its form) that will be directly billed to this project. If names are not known, list the job classifications. Individuals added after the Agreement is awarded **must** fall into one of the classifications and rates listed, so include all classifications that could be directly billed to this project.

For each person or job classification, first list their currently hourly rate in the "Current Hourly Rate ($)" column. In the remaining columns, enter the rates for the entire term of the Agreement, as shown on the Std. 213. Projected rates are acceptable and expected, average rates are not acceptable. Providing hourly rate ranges (e.g. $50 - $75) for a given period of time is also acceptable. If awarded an Agreement, the rates in your proposal become part of the signed Agreement and may not be changed. Thus, you cannot bill for more than the rate or the top of the rate range provided for the given period of time.

E. Calculation of Fringe Benefits, Indirect Overhead, General Administrative Expenses, and Profit Rates (Tabs: Exh C Prime Fee Calc, Exh C Sub#1 Fees Calc, etc. if more than one key subcontractor)

Provide fringe, indirect overhead, G&A and profit rates (%). Profit cannot exceed 10% of the PIER funds allocated to the project. Change the column headings, if appropriate, to match your chart of accounts.

Show the formulas you used to calculate billable charges for fringe, indirect overhead, G&A, and Profit. The Prime Contractor may not apply profit to subcontractor invoices, nor may subcontractors apply profit to sub-subcontractor invoices.

List items you include in each category (Fringe Benefits, Indirect Overhead, and G&A).

Note: If your accounting systems and rate structures have been audited by an external agency, please provide a copy of their acceptance/approval of your rates and fees.

Except as provided for in the contract, Contractor shall use the Federal OMB Circulars A-87, A-21, A-122 or FAR Part 31 in determining allowable and unallowable costs.

F. Direct Labor by Task (Tabs: Prime Task Labor, Exh C Sub#1 Task Labor, etc. if more than one key subcontractor)

In the first two columns, list the same names and job classifications as listed on the Personnel Hourly Rates and Benefits form. (See D, above)

Insert the number of hours that each person/position listed will work on the corresponding tasks.

G. Pre-approved Travel, Equipment List, Materials List, and Miscellaneous Expenditures (Tab: Exh C, Travel & Equipment)

If on the PIER budget forms for the Prime Contractor and all Key Subcontractors there are amounts listed under the columns "Travel," "Equipment," "Materials," and "Miscellaneous," then you must provide details of those expenditures on the corresponding tables in this worksheet.

Task numbers must be entered for all items on each table. The task numbers do not carry forward from other worksheets because not all tasks will have money allocated to these areas.

Pre-approved Travel List

For Pre-approved Travel, include at least 3 meetings: the kick-off meeting, critical project review(s) meetings, and the final meeting. Also include any other trips that you can identify. Any trips not identified here will need prior written approval by the Commission Contract Manager. Along with the purpose, include the destination, person or people taking the trip, and the amount for each trip. Please note that travel is reimbursed at state rates.

Equipment

List equipment that will be purchased partly or in full with PIER funds. Include the name, a description, the purpose and the amount of each piece of equipment. Anything that costs more than $5,000 and has a useful life of more than 1 year is considered equipment. This definition includes the purchase of components that will be assembled into something that costs more than $5,000 and has a useful life of more than 1 year. If possible, funds other than those from PIER, including match funds should be used to purchase equipment. Equipment purchased partly or fully with PIER funds will be listed on a UCC.1 form that will be filled out by a Commission Contracts Office prior to the start of the Agreement.

Materials

Please fill out the information requested if the materials total over $5,000.

Miscellaneous Expenditures

Please fill out the information requested if the micellaneous expenditures total over $5,000.

Instructions

If you have alternate means of creating a Gantt Chart (such as Microsoft Project), then you may use it. However, please make it print one landscape sheet.

III. Instructions For Exhibit C (Budget Forms)

The Prime Contractor and Key Subcontractors must submit information on all the Exhibit B Budget forms. (A "Key" Subcontractor is one that receives either 25% or $100,000 or more of PIER funds. "Minor" Subcontractors, i.e., those either receiving less than 25% or less than $100,000 of PIER funds, do not need to provide detailed budget spreadsheets.)

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THE RATES INDENTIFIED IN YOUR BUGET BECOME PART OF THE CONTRACT AND MAY NOT BE CHANGED. YOU MAY PROVIDE A SALARY RATE OR RANGE BY NAME OR CLASSIFICATION. THE SALARY RATE IS CAPPED, THE TOP OF EACH RANGE IS CAPPED FOR REIMBURSEMENT BY THE COMMISSION. THE COMMISSION WILL REIMBURSE ONLY ACTUAL COSTS WITHIN THE CAPPED RATE OR RANGE. AVERAGE RATES ARE NOT ACCEPTABLE.

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Rows

For Task 1.1, Kick-off Meeting, and Task 1.3, Final Meeting, budget for the number of technical and administrative personnel who will be attending the meeting with PIER staff in Sacramento.

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Columns

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Do not fill in the column "Key Subcontractors." This information will fill in automatically from their budget forms.

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Each of the columns making up the "Project Operating Expenses" should include, if applicable, direct overhead.

C. Match Budget (Tabs: Exh C Prime-Match, Exh C Sub#1 Match, etc. if more than one key subcontractor)

Fill in the amounts of match funding in each of the cells except for the rows of Task 1.5 and 1.9 and for the column "Key Subcontractors." Tasks 1.5 and 1.9 do not have any expenses associated with them, and the Key Subcontractor column is calculated from other budget worksheets.

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In the first two columns, list the names and job classifications for everyone from the Prime Contractor (or Key Subcontractor on its form) that will be directly billed to this project. If names are not known, list the job classifications. Individuals added after the Agreement is awarded **must** fall into one of the classifications and rates listed, so include all classifications that could be directly billed to this project.

Instructions

For each person or job classification, first list their currently hourly rate in the "Current Hourly Rate ($)" column. In the remaining columns, enter the rates for the entire term of the Agreement, as shown on the Std. 213. Projected rates are acceptable and expected, average rates are not acceptable. Providing hourly rate ranges (e.g. $50 - $75) for a given period of time is also acceptable. If awarded an Agreement, the rates in your proposal become part of the signed Agreement and may not be changed. Thus, you cannot bill for more than the rate or the top of the rate range provided for the given period of time.

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Provide fringe, indirect overhead, G&A and profit rates (%). Profit cannot exceed 10% of the PIER funds allocated to the project. Change the column headings, if appropriate, to match your chart of accounts.

Show the formulas you used to calculate billable charges for fringe, indirect overhead, G&A, and Profit. The Prime Contractor may not apply profit to subcontractor invoices, nor may subcontractors apply profit to sub-subcontractor invoices.

List items you include in each category (Fringe Benefits, Indirect Overhead, and G&A).

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In the first two columns, list the same names and job classifications as listed on the Personnel Hourly Rates and Benefits form. (See D, above)

Insert the number of hours that each person/position listed will work on the corresponding tasks.

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If on the PIER budget forms for the Prime Contractor and all Key Subcontractors there are amounts listed under the columns "Travel," "Equipment," "Materials," and "Miscellaneous," then you must provide details of those expenditures on the corresponding tables in this worksheet.

Instructions

Task numbers must be entered for all items on each table. The task numbers do not carry forward from other worksheets because not all tasks will have money allocated to these areas.

Pre-approved Travel List

For Pre-approved Travel, include at least 3 meetings: the kick-off meeting, critical project review(s) meetings, and the final meeting. Also include any other trips that you can identify. Any trips not identified here will need prior written approval by the Commission Contract Manager. Along with the purpose, include the destination, person or people taking the trip, and the amount for each trip. Please note that travel is reimbursed at state rates.

Equipment

List equipment that will be purchased partly or in full with PIER funds. Include the name, a description, the purpose and the amount of each piece of equipment. Anything that costs more than $5,000 and has a useful life of more than 1 year is considered equipment. This definition includes the purchase of components that will be assembled into something that costs more than $5,000 and has a useful life of more than 1 year. If possible, funds other than those from PIER, including match funds should be used to purchase equipment. Equipment purchased partly or fully with PIER funds will be listed on a UCC.1 form that will be filled out by a Commission Contracts Office prior to the start of the Agreement.

Materials

Please fill out the information requested if the materials total over $5,000.

Miscellaneous Expenditures

Please fill out the information requested if the micellaneous expenditures total over $5,000.

IV. Instructions for Exhibit D, List of Contacts, (Tab: Exh D - List of Contacts)

Insert the name, address, phone number, fax number, and e-mail address of the Contractor's Project Manager, Contracts Officer, Accounting Invoicing Contact, and Legal Notice in the spaces provided.

Template
for Attachment B
Schedule of Deliverables and Due Dates

Insert Name of Company or Organization

Task Number	Task Name	Deliverable(s)	Planned Start Date	Planned Completion Date	PIER Funds	Match Funds
1.0	**Administration**					
1.1	Attend Kick-off Meeting	An Updated Schedule of Deliverables			0	0
		An Updated Gantt Chart				
		An Updated List of Match Funds				
		An Updated List of Permits				
		Schedule for Recruiting PAC Members (optional)				
1.2	CPR Meetings	CPR Report(s)			0	0
		CPR deliverables identified in this Scope of Work				
	Commission Contract Manager Deliverables	Agenda and a List of Expected Participants				
		Schedule for Written Determination				
		Written Determination				
1.3	Final Meeting	Written documentation of meeting sgreements and all pertinent information			0	0
		Schedule for completing closeout activities				
1.4	Monthly Progress Reports	Monthly Progress Reports			0	0
1.5	Test Plans, Technical Reports and Interim Deliverables				0	0
1.6	Final Report					
1.6.1	Final Report Outline	Draft Outline of the Final Report			0	0
		Final Outline of the Final Report				
1.6.2	Final Report	Draft Final Report			0	0
		Final Report				
1.7	Identify and Obtain Matching Funds	A letter regarding Match Funds or stating that no Match Funds are provided			0	0
		Letter(s) for New Match Funds				
		A copy of each Match Fund commitment letter				
		Letter that Match Funds were Reduced (if applicable)				
1.8	Identify and Obtain Required Permits	A letter documenting the Permits or stating that no Permits are required			0	0
		Updated list of Permits as they change during the Term of the Agreement				
		Updated schedule for acquiring Permits as it changes during the Term of the Agreement				
		A copy of each approved Permit				
1.9	Electronic File Format	A Letter requesting exemption from the Electronic File Format (if applicable)			0	0
1.10	Establish the PAC (optional)	Draft List of PAC Members			0	0

Template
for Attachment B
Schedule of Deliverables and Due Dates

		Final List of PAC Members				
		Letters of acceptance, or other comparable documentation of commitment for each PAC Member				
1.11	Conduct PAC Meetings (optional)	Draft PAC Meeting Schedule			0	0
		Final PAC Meeting Schedule				
		PAC Meeting Agenda(s) with Back-up Materials for Agenda Items				
		Written PAC meeting summaries, including recommended resolution of major PAC issues				
	Technical Tasks					
Task 2	Name of Task 2	1. Name of Deliverable for Task 2			0	0
Task 3	Name of Task 3	1. Name of Deliverable for Task 3			0	0
Task 4	Name of Task 4	1. Name of Deliverable for Task 4			0	0
	Critical Project Review (example only)					
		2. Name of Deliverable for Task 4				
Task 5	Name of Task 5	1. Name of Deliverable for Task 5			0	0
Task 6	Name of Task 6	1. Name of Deliverable for Task 6			0	0
Task 7	Name of Task 7	1. Name of Deliverable for Task 7			0	0
Task 8	Name of Task 8	1. Name of Deliverable for Task 8			0	0
	Critical Project Review(example only)					
		2. Name of Deliverable for Task 8				
Task 9	Name of Task 9	1. Name of Deliverable for Task 9			0	0
Task 10	Name of Task 10	1. Name of Deliverable for Task 10			0	0
Task 11	Name of Task 11	1. Name of Deliverable for Task 11			0	0
Task 12	Name of Task 12	Etc. . .			0	0
Task 13	Name of Task 13				0	0
Task 14	Name of Task 14				0	0
Task 15	Name of Task 15				0	0
Task 16	Name of Task 16				0	0
Task 17	Name of Task 17				0	0
Task n-2	Acquisition System and Benefits Data Reporting Requirements	Draft DAS Implementation Plan			0	0
		Final DAS Implementation Plan				
		Draft DAS System Test Plan				
		Final DAS System Test Plan				
		Draft DAS System Test Report				
		Final DAS System Test Report				
		Draft Annual DAS Reports				
		Final Annual DAS Reports				
Task n-1	Technology Transfer Activities *(If applicable)*				0	0
Task n	Production Readiness Plan *(If applicable)*				0	0
				Total	$ -	$ -

Template
for Attachment B
Gantt Chart

	2003												2004												2005												2006											
Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.1																																															
1.2																																															
1.3	Example Only																																														
1.4					Delete																																											
1.6																																															
1.7																																															
1.8																																															
1.10																																															
1.11																																															
2																																															
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18																																															
19																																															
20																																															

Exhibit C
Budget Summary

Summary Project Budget Insert Name of Company or Organization		PIER Reimbursable Task Costs	Task Match Funds	Total Task Costs
Task 1	**Administration**	0	0	0
	Project Technical Activities			
Task 2	Name of Task 2	0	0	0
Task 3	Name of Task 3	0	0	0
Task 4	Name of Task 4	0	0	0
Task 5	Name of Task 5	0	0	0
Task 6	Name of Task 6	0	0	0
Task 7	Name of Task 7	0	0	0
Task 8	Name of Task 8	0	0	0
Task 9	Name of Task 9	0	0	0
Task 10	Name of Task 10	0	0	0
Task 11	Name of Task 11	0	0	0
Task 12	Name of Task 12	0	0	0
Task 13	Name of Task 13	0	0	0
Task 14	Name of Task 14	0	0	0
Task 15	Name of Task 15	0	0	0
Task 16	Name of Task 16	0	0	0
Task 17	Name of Task 17	0	0	0
Task n-2	Acquisition System and Benefits Data Reporting Requirements	0	0	0
Task n-1	Technology Transfer Activities (If applicable)	0	0	0
Task n	Production Readiness Plan (If applicable)	0	0	0
	Technical Activities Subtotals	0	0	0

	Total PIER Cost	Total Match Funds	Total Project Cost
Project Totals	0	0	0

Exhibit C, Table 1
Prime Contractor PIER Budget

Budget for PIER Reimbursement to Prime Contractor		Personal Services		Project Operating Expenses (1)						Fees			PIER Reimburs-ableTask Costs
Insert Name of Company or Organization		Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Key Subcon-tractors (2)	Indirect Overhead	G&A	Profit (3)	
1.0	**Project Administration Activities**												
1.1	Attend Kick-off Meeting								0				0
1.2	CPR Meetings								0				0
1.3	Final Meeting								0				0
1.4	Monthly Progress Reports								0				0
1.5	Test Plans, Technical Reports and Interim Deliverables	0	0	0	0	0	0	0	0	0	0	0	0
1.6	Final Report								0				0
1.6.1	Final Report Outline								0				0
1.6.2	Final Report								0				0
1.7	Identify and Obtain Matching Funds	0	0	0	0	0	0	0	0	0	0	0	0
1.8	Identify and Obtain Required Permits	0	0	0	0	0	0	0	0	0	0	0	0
1.9	Electronic File Format	0	0	0	0	0	0	0	0	0	0	0	0
1.10	Establish the PAC (optional)								0				0
1.11	Conduct PAC Meetings (optional)								0				0
	Administration Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0	0
	Project Technical Activities (Delete rows as necessary)												
Task 2	Name of Task 2								0				0
Task 3	Name of Task 3								0				0
Task 4	Name of Task 4								0				0
Task 5	Name of Task 5								0				0
Task 6	Name of Task 6								0				0
Task 7	Name of Task 7								0				0
Task 8	Name of Task 8								0				0
Task 9	Name of Task 9								0				0
Task 10	Name of Task 10								0				0
Task 11	Name of Task 11								0				0
Task 12	Name of Task 12								0				0
Task 13	Name of Task 13								0				0
Task 14	Name of Task 14								0				0
Task 15	Name of Task 15								0				0
Task 16	Name of Task 16								0				0
Task 17	Name of Task 17								0				0
Task n-2	Acquisition System and Benefits Data Reporting Requirements								0				0
Task n-1	Technology Transfer Activities (If applicable)								0				0
Task n	Production Readiness Plan (If applicable)								0				0
	Technical Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0	0

Prime Contractor	Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Key Subcon-tractors	Indirect Overhead	G&A	Profit	Total PIER Reimburs-able Cost
PIER Reimbursable Totals	0	0	0	0	0	0	0	0	0	0	0	0
Percent of the Total	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
						Total project expenses =		0	Total overhead & profit =			0

(1) Each project operating expense should include, if applicable, direct overhead.
(2) Subcontracts worth $100,000 or 25% of the total award, whichever is less.
(3) Prime Contractor profit not allowed on Subcontractor invoices and profit cannot exceed 10% of the PIER funds allocated to the Task.

Exhibit C, Table 1
Key Subcontractor #1 PIER Budget

Budget for PIER Reimbursement to Key Subcontractor #1 (1)		Personal Services		Project Operating Expenses (2)					Fees			PIER Reimburs-ableTask Costs for Key Sub #1
Insert Name of Key Subcontractor #1		Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit (3)	
1.0	**Project Administration Activities**											
1.1	Attend Kick-off Meeting											0
1.2	CPR Meetings											0
1.3	Final Meeting											0
1.4	Monthly Progress Reports											0
1.5	Test Plans, Technical Reports and Interim Deliverables	0	0	0	0	0	0	0	0	0	0	0
1.6	Final Report											0
1.6.1	Final Report Outline											0
1.6.2	Final Report											0
1.7	Identify and Obtain Matching Funds	0	0	0	0	0	0	0	0	0	0	0
1.8	Identify and Obtain Required Permits	0	0	0	0	0	0	0	0	0	0	0
1.9	Electronic File Format	0	0	0	0	0	0	0	0	0	0	0
1.10	Establish the PAC (optional)											0
1.11	Conduct PAC Meetings (optional)											0
	Administration Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0
	Project Technical Activities (Delete rows as necessary)											
Task 2	Name of Task 2											0
Task 3	Name of Task 3											0
Task 4	Name of Task 4											0
Task 5	Name of Task 5											0
Task 6	Name of Task 6											0
Task 7	Name of Task 7											0
Task 8	Name of Task 8											0
Task 9	Name of Task 9											0
Task 10	Name of Task 10											0
Task 11	Name of Task 11											0
Task 12	Name of Task 12											0
Task 13	Name of Task 13											0
Task 14	Name of Task 14											0
Task 15	Name of Task 15											0
Task 16	Name of Task 16											0
Task 17	Name of Task 17											0
Task n-2	Acquisition System and Benefits Data Reporting Requirements											0
Task n-1	Technology Transfer Activities (If applicable)											0
Task n	Production Readiness Plan (If applicable)											0
	Technical Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0

Key Subcontractor #1	Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit	Key Sub #1 PIER Reimburs-able Cost
PIER Reimbursable Totals	0	0	0	0	0	0	0	0	0	0	0
Percent of the Total	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
			Total project expenses =				0	Total overhead & profit =		0	

(1) Subcontracts worth $100,000 or 25% of the total award, whichever is less.
(2) Each project operating expense should include, if applicable, direct overhead.
(3) Subcontractor profit is not allowed on Sub-subcontractor invoices and profit cannot exceed 10% of the PIER funds allocated to the Task.

Exhibit C, Table 1
Key Subcontractor #2 PIER Budget

Budget for PIER Reimbursement to Key Subcontractor #2 (1)		Personal Services		Project Operating Expenses (2)					Fees			PIER Reimburs-ableTask Costs for Key Sub #2
Insert Name of Key Subcontractor #2:		Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit (3)	
1.0	**Project Administration Activities**											
1.1	Attend Kick-off Meeting											0
1.2	CPR Meetings											0
1.3	Final Meeting											0
1.4	Monthly Progress Reports											0
1.5	Test Plans, Technical Reports and Interim Deliverables	0	0	0	0	0	0	0	0	0	0	0
1.6	Final Report											0
1.6.1	Final Report Outline											0
1.6.2	Final Report											0
1.7	Identify and Obtain Matching Funds	0	0	0	0	0	0	0	0	0	0	0
1.8	Identify and Obtain Required Permits	0	0	0	0	0	0	0	0	0	0	0
1.9	Electronic File Format	0	0	0	0	0	0	0	0	0	0	0
1.10	Establish the PAC (optional)											0
1.11	Conduct PAC Meetings (optional)											0
	Administration Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0
	Project Technical Activities (Delete rows as necessary)											
Task 2	Name of Task 2											0
Task 3	Name of Task 3											0
Task 4	Name of Task 4											0
Task 5	Name of Task 5											0
Task 6	Name of Task 6											0
Task 7	Name of Task 7											0
Task 8	Name of Task 8											0
Task 9	Name of Task 9											0
Task 10	Name of Task 10											0
Task 11	Name of Task 11											0
Task 12	Name of Task 12											0
Task 13	Name of Task 13											0
Task 14	Name of Task 14											0
Task 15	Name of Task 15											0
Task 16	Name of Task 16											0
Task 17	Name of Task 17											0
Task n-2	Acquisition System and Benefits Data Reporting Requirements											0
Task n-1	Technology Transfer Activities (If applicable)											0
Task n	Production Readiness Plan (If applicable)											0
	Technical Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0

Key Subcontractor #2	Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit	Key Sub #2 PIER Reimburs-able Cost
PIER Reimbursable Totals	0	0	0	0	0	0	0	0	0	0	0
Percent of the Total	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
						Total project expenses =	0	Total overhead & profit =		0	

(1) Subcontracts worth $100,000 or 25% of the total award, whichever is less.
(2) Each project operating expense should include, if applicable, direct overhead.
(3) Subcontractor profit is not allowed on Sub-subcontractor invoices and profit cannot exceed 10% of the PIER funds allocated to the Task.

Exhibit C, Table 2
Prime Contractor Match Budget

Budget for Match Funding Supplied by Prime Contractor		Personal Services		Project Operating Expenses						Fees			Prime's Total Task Match Funds
Insert Name of Company or Organization		Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Key Subcon-tractors	Indirect Overhead	G&A	Profit	
1.0	**Project Administration Activities**												
1.1	Attend Kick-off Meeting								0				0
1.2	CPR Meetings								0				0
1.3	Final Meeting								0				0
1.4	Monthly Progress Reports								0				0
1.5	Test Plans, Technical Reports and Interim Deliverables	0	0	0	0	0	0	0	0	0	0	0	0
1.6	Final Report								0				0
1.6.1	Final Report Outline								0				0
1.6.2	Final Report								0				0
1.7	Identify and Obtain Matching Funds								0				0
1.8	Identify and Obtain Required Permits								0				0
1.9	Electronic File Format	0	0	0	0	0	0	0	0	0	0	0	0
1.10	Establish the PAC (optional)								0				0
1.11	Conduct PAC Meetings (optional)								0				0
	Administration Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0	0
	Project Technical Activities (Delete rows as necessary)												
Task 2	Name of Task 2								0				0
Task 3	Name of Task 3								0				0
Task 4	Name of Task 4								0				0
Task 5	Name of Task 5								0				0
Task 6	Name of Task 6								0				0
Task 7	Name of Task 7								0				0
Task 8	Name of Task 8								0				0
Task 9	Name of Task 9								0				0
Task 10	Name of Task 10								0				0
Task 11	Name of Task 11								0				0
Task 12	Name of Task 12								0				0
Task 13	Name of Task 13								0				0
Task 14	Name of Task 14								0				0
Task 15	Name of Task 15								0				0
Task 16	Name of Task 16								0				0
Task 17	Name of Task 17								0				0
Task n-2	Acquisition System and Benefits Data Reporting Requirements								0				0
Task n-1	Technology Transfer Activities (If applicable)								0				0
Task n	Production Readiness Plan (If applicable)								0				0
	Technical Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0	0

Prime Contractor	Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Key Subcon-tractors	Indirect Overhead	G&A	Profit	Total Match Funds
Match Funds Totals	0	0	0	0	0	0	0	0	0	0	0	0
Percent of the Total	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
							Total project expenses =	0	Total overhead & profit =		0	

Exhibit C, Table 2
Key Subcontractor #1 Match Budget

Budget for Match Funding Supplied by Key Subcontractor #1		Personal Services		Project Operating Expenses					Fees			Key Sub #1's Total Task Match Funds
Insert Name of Key Subcontractor #1		Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit	
1.0	**Project Administration Activities**											
1.1	Attend Kick-off Meeting											0
1.2	CPR Meetings											0
1.3	Final Meeting											0
1.4	Monthly Progress Reports											0
1.5	Test Plans, Technical Reports and Interim Deliverables	0	0	0	0	0	0	0	0	0	0	0
1.6	Final Report											0
1.6.1	Final Report Outline											0
1.6.2	Final Report											0
1.7	Identify and Obtain Matching Funds											0
1.8	Identify and Obtain Required Permits											0
1.9	Electronic File Format	0	0	0	0	0	0	0	0	0	0	0
1.10	Establish the PAC (optional)											0
1.11	Conduct PAC Meetings (optional)											0
	Administration Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0
	Project Technical Activities (Delete rows as necessary)											
Task 2	Name of Task 2											0
Task 3	Name of Task 3											0
Task 4	Name of Task 4											0
Task 5	Name of Task 5											0
Task 6	Name of Task 6											0
Task 7	Name of Task 7											0
Task 8	Name of Task 8											0
Task 9	Name of Task 9											0
Task 10	Name of Task 10											0
Task 11	Name of Task 11											0
Task 12	Name of Task 12											0
Task 13	Name of Task 13											0
Task 14	Name of Task 14											0
Task 15	Name of Task 15											0
Task 16	Name of Task 16											0
Task 17	Name of Task 17											0
Task n-2	Acquisition System and Benefits Data Reporting Requirements											0
Task n-1	Technology Transfer Activities (If applicable)											0
Task n	Production Readiness Plan (If applicable)											0
	Technical Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0

Key Subcontractor #1	Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit	Key Sub #1's Total Task Match Funds
Match Funds Totals	0	0	0	0	0	0	0	0	0	0	0
Percent of the Total	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
			Total project expenses =				0	Total overhead & profit =		0	

Exhibit C, Table 2
Key Subcontractor #2 Match Budget

Budget for Match Funding Supplied by Key Subcontractor #2		Personal Services		Project Operating Expenses					Fees			Key Sub #2's Total Task Match Funds
Insert Name of Key Subcontractor #2:		Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit	
1.0	**Project Administration Activities**											
1.1	Attend Kick-off Meeting											0
1.2	CPR Meetings											0
1.3	Final Meeting											0
1.4	Monthly Progress Reports											0
1.5	Test Plans, Technical Reports and Interim Deliverables	0	0	0	0	0	0	0	0	0	0	0
1.6	Final Report											0
1.6.1	Final Report Outline											0
1.6.2	Final Report											0
1.7	Identify and Obtain Matching Funds											0
1.8	Identify and Obtain Required Permits											0
1.9	Electronic File Format	0	0	0	0	0	0	0	0	0	0	0
1.10	Establish the PAC (optional)											0
1.11	Conduct PAC Meetings (optional)											0
	Administration Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0
	Project Technical Activities (Delete rows as necessary)											
Task 2	Name of Task 2											0
Task 3	Name of Task 3											0
Task 4	Name of Task 4											0
Task 5	Name of Task 5											0
Task 6	Name of Task 6											0
Task 7	Name of Task 7											0
Task 8	Name of Task 8											0
Task 9	Name of Task 9											0
Task 10	Name of Task 10											0
Task 11	Name of Task 11											0
Task 12	Name of Task 12											0
Task 13	Name of Task 13											0
Task 14	Name of Task 14											0
Task 15	Name of Task 15											0
Task 16	Name of Task 16											0
Task 17	Name of Task 17											0
Task n-2	Acquisition System and Benefits Data Reporting Requirements											0
Task n-1	Technology Transfer Activities (If applicable)											0
Task n	Production Readiness Plan (If applicable)											0
	Technical Activities Subtotals	0	0	0	0	0	0	0	0	0	0	0

Key Subcontractor #2	Direct Labor	Fringe Benefits	Materials	Equipment	Travel	Misc.	Minor Subcon-tractors	Indirect Overhead	G&A	Profit	Key Sub #2's Total Task Match Funds
Match Funds Totals	0	0	0	0	0	0	0	0	0	0	0
Percent of the Total	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
			Total project expenses =				0	Total overhead & profit =		0	

Exhibit C, Table 3
Prime Contractor's
Personnel Hourly Rates and Benefits*

Insert Name of Company or Organization

Name**	Job Classification/Title	Dates	Projected Hourly Rate Ranges or Rates ($)									
			From:		From:		From:		From:		From:	
			To:		To:		To:		To:		To:	
		Current Hourly Rate ($)	($) Range From	To	($) Range From	To	($) Range From	To	($) Range From	To	($) Range From	To

*For each person or job classification, first list their current hourly rate in the "Current Hourly Rate ($)" column. In the remaining columns, enter the rates for the entire term of the Agreement, as shown on the Std. 213. Projected rates are acceptable and expected, average rates are not acceptable. Providing hourly rate ranges (e.g., $50 - $75) for a given period of time is also acceptable. If awarded an Agreement, the rates in your proposal become part of the signed Agreement and may not be changed. Thus, you cannot bill for more than the rate or the top of the rate range provided for the given period of time.

** List the names and job classifications for everyone from this company/organization that will be directly billed to this project. If names are not known, list the job classifications. Individuals added after the Agreement is awarded **must** fall into one of the classifications and rates listed, so include all classifications that could be directly billed to this project.

Exhibit C, Table 3
Key Subcontractor #1
Personnel Hourly Rates and Benefits*

Insert Name of Company or Organization

Name**	Job Classification/Title	Dates Current Hourly Rate ($)	Projected Hourly Rate Ranges or Rates ($) From: / To: ($) Range From	To	From: / To: ($) Range From	To	From: / To: ($) Range From	To	From: / To: ($) Range From	To	From: / To: ($) Range From	To

*For each person or job classification, first list their current hourly rate in the "Current Hourly Rate ($)" column. In the remaining columns, enter the rates for the entire term of the Agreement, as shown on the Std. 213. Projected rates are acceptable and expected, average rates are not acceptable. Providing hourly rate ranges (e.g., $50 - $75) for a given period of time is also acceptable. If awarded an Agreement, the rates in your proposal become part of the signed Agreement and may not be changed. Thus, you cannot bill for more than the rate or the top of the rate range provided for the given period of time.

** List the names and job classifications for everyone from this company/organization that will be directly billed to this project. If names are not known, list the job classifications. Individuals added after the Agreement is awarded **must** fall into one of the classifications and rates listed, so include all classifications that could be directly billed to this project.

Exhibit C, Table 3
Key Subcontractor #2
Personnel Hourly Rates and Benefits*

Insert Name of Company or Organization

Name**	Job Classification/Title	Dates	Projected Hourly Rate Ranges or Rates ($)									
			From:		From:		From:		From:		From:	
			To:		To:		To:		To:		To:	
		Current Hourly Rate ($)	($) Range From	To	($) Range From	To	($) Range From	To	($) Range From	To	($) Range From	To

*For each person or job classification, first list their current hourly rate in the "Current Hourly Rate ($)" column. In the remaining columns, enter the rates for the entire term of the Agreement, as shown on the Std. 213. Projected rates are acceptable and expected, average rates are not acceptable. Providing hourly rate ranges (e.g., $50 - $75) for a given period of time is also acceptable. If awarded an Agreement, the rates in your proposal become part of the signed Agreement and may not be changed. Thus, you cannot bill for more than the rate or the top of the rate range provided for the given period of time.

** List the names and job classifications for everyone from this company/organization that will be directly billed to this project. If names are not known, list the job classifications. Individuals added after the Agreement is awarded **must** fall into one of the classifications and rates listed, so include all classifications that could be directly billed to this project.

Exhibit C, Table 4
Prime Contractor's Calculation of Fringe Benefits, Indirect Overhead, General Administrative Expenses, and Profit Rates

Insert Name of Company or Organization

Rates (percentages) for time intervals from the start of the project through the date as shown on the Std. 213.				**Fringe Benefits (FB)**	**Indirect Overhead (OH)**	**General & Administrative (GA)**	**Profit (P) (10% Max)**
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%

Expense Items in the Budget Spreadsheets	Provide the formula that is used to calculate the amount that is shown in the budget for each of these categories.
Fringe Benefits	
Indirect Overhead	
General & Administrative	
Profit*	

List items you include in each category (e.g., vacation, retirement plan, telephone, secretarial, rent/lease, insurance, etc.)

Fringe Benefits	Indirect Overhead	General & Administrative

* Prime Contractor profit not allowed on Subcontractor invoices.

Exhibit C, Table 4 Key Subcontractor #1
Calculation of Fringe Benefits, Indirect Overhead, General Administrative Expenses, and Profit Rates

Insert Name of Key Subcontractor #1

Rates (percentages) for time intervals from the start of the project through the date as shown on the Std. 213.				**Fringe Benefits (FB)**	**Indirect Overhead (OH)**	**General & Administrative (GA)**	**Profit (P) (10% Max)**
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%

Expense Items in the Budget Spreadsheets	Provide the formula that is used to calculate the amount that is shown in the budget for each of these categories.
Fringe Benefits	
Indirect Overhead	
General & Administrative	
Profit*	

List items you include in each category (e.g., vacation, retirement plan, telephone, secretarial, rent/lease, insurance, etc.)

Fringe Benefits	Indirect Overhead	General & Administrative

*Subcontractor profit is not allowed on Sub-subcontractor invoices.

Exhibit C, Table 4 Key Subcontractor #2
Calculation of Fringe Benefits, Indirect Overhead, General Administrative Expenses, and Profit Rates

Insert Name of Key Subcontractor #2:

Rates (percentages) for time intervals from the start of the project through the date as shown on the Std. 213.				**Fringe Benefits (FB)**	**Indirect Overhead (OH)**	**General & Administrative (GA)**	**Profit (P) (10% Max)**
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%
From:		To:		%	%	%	%

Expense Items in the Budget Spreadsheets	Provide the formula that is used to calculate the amount that is shown in the budget for each of these categories.
Fringe Benefits	
Indirect Overhead	
General & Administrative	
Profit*	

List items you include in each category (e.g., vacation, retirement plan, telephone, secretarial, rent/lease, insurance, etc.)		
Fringe Benefits	Indirect Overhead	General & Administrative

*Subcontractor profit is not allowed on Sub-subcontractor invoices.

Exhibit C, Table 5
Prime Contractor's
Direct Labor Hours by Task

Insert Name of Company or Organization

		Administrative Tasks (Hours)							
Name	Job Classification/Title	1.1 Attend Kick-Off Meeting	1.2 CPR Meetings	1.3 Final Meeting	1.4 Progress Reports	1.6 Final Report	1.10 Establish the PAC	1.11 Conduct PAC Meetings	Total by Person/ Position
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
Totals		0	0	0	0	0	0	0	0

Exhibit C, Table 5
Prime Contractor's
Direct Labor Hours by Task

		Technical Tasks (Hours)										
Name	Job Classification/Title	Name of Task 2	Name of Task 3	Name of Task 4	Name of Task 5	Name of Task 6	Name of Task 7	Name of Task 8	Name of Task 9	Name of Task 10	Name of Task 11	Total by Person/ Position
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
	Totals	0	0	0	0	0	0	0	0	0	0	0

		Technical Tasks (Hours)									
Name	Job Classification/Title	Name of Task 12	Name of Task 13	Name of Task 14	Name of Task 15	Name of Task 16	Name of Task 17	Acquisition System and Benefits Data Reporting Requirements	Technology Transfer Activities (If applicable)	Production Readiness Plan (If applicable)	Total by Person/ Position
											0
											0
											0
											0
											0
											0
											0
											0
											0
											0
											0
	Totals	0	0	0	0	0	0	0	0	0	0

Exhibit C, Table 5
Key Subcontractor #1
Direct Labor Hours by Task

Insert Name of Key Subcontractor #1

		Administrative Tasks (Hours)							
Name	Job Classification/Title	1.1 Attend Kick-Off Meeting	1.2 CPR Meetings	1.3 Final Meeting	1.4 Progress Reports	1.6 Final Report	1.10 Establish the PAC	1.11 Conduct PAC Meetings	Total by Person/ Position
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
	Totals	0	0	0	0	0	0	0	0

Exhibit C, Table 5
Key Subcontractor #1
Direct Labor Hours by Task

		Technical Tasks (Hours)										
Name	Job Classification/Title	Name of Task 2	Name of Task 3	Name of Task 4	Name of Task 5	Name of Task 6	Name of Task 7	Name of Task 8	Name of Task 9	Name of Task 10	Name of Task 11	Total by Person/ Position
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
	Totals	0	0	0	0	0	0	0	0	0	0	0

		Technical Tasks (Hours)									
Name	Job Classification/Title	Name of Task 12	Name of Task 13	Name of Task 14	Name of Task 15	Name of Task 16	Name of Task 17	Acquisition System and Benefits Data Reporting Requirements	Technology Transfer Activities (If applicable)	Production Readiness Plan (If applicable)	Total by Person/ Position
											0
											0
											0
											0
											0
											0
											0
											0
											0
											0
											0
	Totals	0	0	0	0	0	0	0	0	0	0

Exhibit C, Table 5
Key Subcontractor #2
Direct Labor Hours by Task

Insert Name of Key Subcontractor #2:

		Administrative Tasks (Hours)							
Name	Job Classification/Title	1.1 Attend Kick-Off Meeting	1.2 CPR Meetings	1.3 Final Meeting	1.4 Progress Reports	1.6 Final Report	1.10 Establish the PAC	1.11 Conduct PAC Meetings	Total by Person/ Position
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
Totals		0	0	0	0	0	0	0	0

Exhibit C, Table 5
Key Subcontractor #2
Direct Labor Hours by Task

		Technical Tasks (Hours)										
Name	Job Classification/Title	Name of Task 2	Name of Task 3	Name of Task 4	Name of Task 5	Name of Task 6	Name of Task 7	Name of Task 8	Name of Task 9	Name of Task 10	Name of Task 11	Total by Person/ Position
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
												0
	Totals	0	0	0	0	0	0	0	0	0	0	0

		Technical Tasks (Hours)									
Name	Job Classification/Title	Name of Task 12	Name of Task 13	Name of Task 14	Name of Task 15	Name of Task 16	Name of Task 17	Acquisition System and Benefits Data Reporting Requirements	Technology Transfer Activities (If applicable)	Production Readiness Plan (If applicable)	Total by Person/ Position
											0
											0
											0
											0
											0
											0
											0
											0
											0
											0
											0
	Totals	0	0	0	0	0	0	0	0	0	0

Exhibit C, Table 6
Pre-approved Travel, Equipment List, Materials List, and Miscellaneous Expenditures

Pre-approved Travel List *				
Task No.	**Trip Purpose**	**Location**	**Who**	**Amount**
			Total	

*** Travel is reimbursed at state rates.**

Equipment				
Task No.	**Name of Equip.**	**Description**	**Purpose**	**Amount**
			Total	

Exhibit C, Table 6
Pre-approved Travel, Equipment List, Materials List, and Miscellaneous Expenditures

Material(s)		
Task No.	**Descriptions of Material(s)**	**Amount**
	Total	

Miscellaneous Expenditures		
Task No.	**Descriptions of Expenditures**	**Amount**
	Total	

Exhibit D
List of Contacts

Insert the name, address, phone number, fax number, and e-mail address of the Contractor's Project Manager, Contracts Officer, Accounting Invoicing Contact, and Legal Notice in the spaces provided in the right-hand column. The Commission will fill in the left-hand column if this project is selected for funding.

Commission Contract Manager:

<name>
California Energy Commission
1516 Ninth Street, MS - 43
Sacramento, CA 95814
Phone: (916) ???-????
Fax: (916) ???-????
e-mail: ????????@energy.state.ca.us

Contractor Project Manager:

<name>
<address line 1>
<address line 2>
<address line 3>
Phone:
Fax:
e-mail:

Commission Contracts Officer:

Jeffrey Rowe
California Energy Commission
1516 Ninth Street, MS - 18
Sacramento, CA 95814
Phone: (916) 654-5833
Fax: (916) 654-4423
e-mail: jrowe@energy.state.ca.us
Deliver confidential deliverables to this location only.

Contractor Contract Officer:

<name>
<address line 1>
<address line 2>
<address line 3>
Phone:
Fax:
e-mail:

Invoices, Progress Reports and Non-Confidential Deliverables to:
Frank Taniguchi
Accounting Office
California Energy Commission
1516 Ninth Street, MS - 2
Sacramento, CA 95814
Phone: (916) 654-3906
Fax: (916) 653-1435
e-mail: ftaniguc@energy.state.ca.us

Contractor Accounting Invoicing Contact:

<name>
<address line 1>
<address line 2>
<address line 3>
Phone:
Fax:
e-mail:

Commission Legal Notices:

Cheryl Raedel
Manager, Contracts Office
California Energy Commission
1516 Ninth Street, MS -18
Sacramento, CA 95814
Phone: (916) 654-4392
Fax: (916) 654-4423
e-mail: craedel@energy.state.ca.us

Contractor Legal Notices:

<name>
<address line 1>
<address line 2>
<address line 3>

Phone:
Fax:
e-mail:

RFP Attachment 11

Customer References

STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION
CONTRACTS OFFICE

CUSTOMER REFERENCES
Provide a minimum of 4 references, use additional pages as needed.

Reference #1

Name of Organization	
Address	
Contact Name	
Contact Title	
Contact Phone Number	
Describe the services and products your firm provided to the organization.	

RFP Attachment 12

Instructions for Completing Selected Sections of RFP 500-03-501

<This RFP Attachment 12 template contains the framework and instructions to complete the Technical Eligibility and Feasibility Screening, Turn-Key Demonstration Project Information, Proposed Non-Predefined Application, Market Estimate and Benefit, Commercialization Path, Impact and Benefits to California, Project Manager and Project Team, Letter from Servicing Utility, Data Acquisition and Reporting, Project Funds and Project Match Funds sections of the proposal. All instructions or explanations in <italics> should be deleted as this template is filled out for a specific proposal. This attachment, along with the Executive Summary (Att. 6) must be kept to 40 pages maximum.>

Section A

Technical Eligibility and Feasibility Screening
<Provide the following information to permit the Scoring Committee to complete technical eligibility and feasibility screening on the proposed demonstration project. The Scoring Committee will not evaluate proposals that fail any screen. >

Demonstration Project End User or Host Involvement Clearly Identified

<Provide a signed letter from the proposed end user or host stating their understanding of the proposed demonstration project and how it is going to be applied in their operation, facility or location. The letter must also include the expected involvement of the end user or host and the amount of cash match or in-kind match funds being provided by the end user or host.>

Significant Market Potential for the Application Demonstrated

Market Potential for Demonstrated Project
The proposed EES product must have a clear market potential in California that is considered significant. Using the guidance described in Attachment 14, provide the following information: California market estimate (MW of Storage) for the proposed application to be demonstrated: _____ _____ _____ _____ *(Note: Must be 100MW or Above)*

Minimum Cash Match Funds

The minimum acceptable amount of cash match funds is 20%. Cash match funds are the Bidder and team member expenditures specific to the project and made during the agreement duration for allowable travel expenses (other than labor hours), equipment, material, and miscellaneous purchases, and payments for subcontracted work. Proposals will be screened based on the matching funding being provided. Federal and State of California, including PIER R&D and Renewables, funds cannot be used as match funds under this RFP. Cash match and in-kind match funds will also be scored in the technical evaluation portion of this RFP.

Benefit to Cost Ratio of Proposed EES Project

< Provide the estimated benefit to cost ratio calculations defined in the form below. >

Required Benefit to Cost Ratio Calculation Results (Criteria)
These are the bottom-line estimates of expected benefits and associated costs for both the demonstration timeframe and the mature system timeframe. ("B" is the expected benefits over 10 years expressed in net present value and "C" is the expected cost over 10 years expressed in net present value as defined in Attachment 14)
1. Demonstration B/C ratio: _____ Note: Minimum acceptable ratio is 0.300
2. Mature B/C ratio: _____ Note: Minimum acceptable ratio is 1.00
3. Justification (if required); _____ _____ _____ _____
Note: Calculations for "B" and "C" must be consistent with the methodology defined in Attachment 14 or backed up with sufficient details to justify proposed ratios.

Proposed Project Qualifies for PIER Funding by Advancing the Commercial Market Transition of EES Technology

< Provide a clear and convincing explanation of why PIER funding is appropriate and needed for the proposed activities. Each proposal must address how the proposed demonstration project will advance the commercial market transition of EES technology in at least one of the following areas:

- *a new application for EES technology,*

- *a new EES technology,*
- *a new business model for deployment of EES.*
- *a substantial expansion of the range or size of current technology into a new technologically challenging area.*
- *a substantial efficiency or reliability enhancement of an existing EES technology.>*

Section B

Technical Evaluation Inputs

<Provide the following information to permit the Commission to complete technical evaluation scoring on the proposed demonstration project. The Commission will use the information provided in this section along with the other information provided in the proposal to score the proposals as explained in RFP Question 25, 26 and 27. >

Turn-Key Demonstration Project Information

<Provide brief overview of the key elements of your proposed turn-key demonstration Project by providing the information requested below using the forms shown below. Refer to Attachment 14 for the predefined applications and associated recognized benefits. If the application you are proposing is not one of the predefined applications in Attachment 14, complete the table provided in the "Proposed Non-Predefined Application for EES Demonstration Project" section later in this attachment and extract only the summary information required for the table in this section. You may expand the individual cells of the table as necessary to adequately provide an overview of your proposed project. >

Overview

<Provide brief overview of the key elements of your proposed turn-key demonstration Project in sufficient details to fully understand the proposed demonstration project by completing the table below.>

Key Elements of the Proposed Turn-Key Demonstration Project
1. Brief Project Description: _____ _____ _____ _____
2. Describe how storage will be used or enhanced (application and benefit): _____ _____ _____ _____

3. End User or Host:
   _____

4. Servicing Utility:
   _____

5. Project Schedule (Base estimates on timeframe (days/weeks/etc.) after contract award):

   System Development Start:_____ Completion:_____

   Installation and Checkout. Start: _____ Completion: _____

   System Commissioning Date: _____

   Field Performance Period: _____

   Demonstration Project Completion Date: _____

6. Project Key Team Members and Areas of Responsibilities:
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____

7. Identify any challenges that have the potential of impacting the overall success of the demonstration project:
   _____
   _____
   _____

Demonstration Project Description

<Expand upon the information provided in the overview by providing a detailed description of the proposed demonstration project including:

- *All key elements of the planning, installation, testing, commissioning, operation and management of the proposed technology and system being demonstrated.*

- *Provide technical descriptions, project illustrations, site level drawings, operational concepts, milestones and any other information necessary to fully describe your proposed demonstration project. These drawings and illustrations are for clarification only. Engineering level drawings are not required for this phase of the proposal evaluation.*
- *Provide a simple block diagram illustrating how the proposed EES project will be installed at the end user or host site and how the proposed system will connect and interact with the electric grid.*
- *Explain the role and involvement of the end user or host.*
- *Explain the role or involvement of the servicing utility and any other utility entity that is actively involved in the project.*
- *Provide a list of any permits, license and/or regulatory approvals that must be obtained to successfully complete the proposed demonstration project. Provide a brief statement and schedule on how and when these items will be obtained in time to support the overall project implementation schedule.*
- *Provide a comprehensive demonstration project schedule that identifies all key milestones, system testing, commissioning, and operations for the expected life of the demonstration project. NOTE: The demonstration project must commission not less than 18 months from contract award, the minimum acceptable field operating time is 18 months and the total project must be at least 36 months. (For example, if the system is expected to commission 10 months after contract award, the project performance monitoring and data collection must run for a minimum of 26 months).*
- *Identify all known technology challenges or concerns, critical schedule milestones, key funding partners or any other element that has the potential of significantly impacting the overall project success if those activities are not delivered as planned.*
- *Provide a transition plan stating how the demonstration system will be operated after the completion of the proposed demonstration project. Clearly define who will assume responsibility for the operation, maintenance, data acquisition and other key element for the expected life of the system or for the remaining portion of the ten year period after completion of the demonstration project contract (whichever is appropriate).>*

Proposed Non-Predefined Application

<NOTE: Complete this section only if you are proposing an application that is not one of the pre-defined applications listed in Attachment 14. For each proposed new application, provide the quantity and quality of information requested below based on the data that best represents your proposed demonstration project.

- *Refer to Attachment 14 for the predefined applications and associated recognized benefits.*
- *Provide sufficient information on the proposed application to fully define all elements of the application, expected benefits and end customer acceptance. As a minimum, provide the following:*
  - *Name of the Proposed Application.*
  - *Technical Considerations (as illustrated in Attachment 14).*
  - *Benefits of the Proposed Application.*

- *Market Factors and Other Considerations for Proposed Application.*
- *Complete the "<u>Proposed Non Predefined Application for Energy Storage Demonstration Project</u>" form below. You may expand the individual cells of the table as necessary to adequately provide the information requested. Refer to Attachment 14 for the detailed information and examples on how to compute the requested information. >*

Proposed Non-Predefined Application for Energy Storage Demonstration Project
NOTE: Use this table if you are proposing an energy storage application that is not one of the predefined applications addressed in RFP Attachment 14. Use the format currently defined in Attachment 14 as a guide for completing this table.
1. Name of the Proposed New Application: _____ _____
2. Technical Considerations: _____ _____ _____ _____
3. Detailed Explanation of Proposed New Application: _____ _____ _____ _____ _____ _____ _____ _____
4. Market Factors and Other Considerations for Proposed Application:_____ _____ _____ _____

Market Estimate and Economic Benefit

<Complete the information requested in the tables that follow based on the data that best represents your proposed demonstration project. Refer to Attachment 14 for the detailed information and examples on how to compute the requested information. You may expand the individual cells of the table as necessary to adequately provide the information requested. If the application you are proposing is not one of the predefined applications in Attachment 14, provide justification and information in the "Proposed Application" section of this Attachment. For these proposed new applications, be sure to fully explain the market estimate for the proposed new application and all expected benefits that this

application is expected to provide. If proposing a demonstration for which multiple benefits are being claimed, ensure sufficient that detail is provided for each separate benefit and/or application. (NOTE: The total benefits allowed from all proposed Power Quality Applications in the proposal are limited to no more than 30% of the total computed amount claimed.) >

Market Estimate for Demonstrated Project
The proposed EES product must have a clear market potential that is considered significant. As described in Attachment 14, provide the following information:
1. Market Estimation Approach and Philosophy: _____ _____ _____ _____
2. Estimated Demand, in California for Storage Systems ($MW_{nameplate}$) for the Proposed Application (over ten years): _____ _____ _____
3. Economic Benefit – Calculated based on Financial Benefits ($/kW) and Estimated Demand (MW): _____ _____ _____ _____

Required Benefit Values
1. Name of Application to be demonstrated:_____ _____
2. Definition of the application if it is not one of the predefined applications described in Attachment 14:_____ _____ _____
3. List of benefits included for this proposed application: _____ _____ _____ _____

4. EES demonstration project cost:
   a. Total EES demonstration project cost (for life of contract): $_____
   b. Estimated 10 year demonstration project cost $_____
   c. NPV of 10 year demonstration project cost (if different than 4. b.): $_____

5. Expected 10 year benefit of EES demonstration project in:
   a. NPV Dollars: $_____
   b. NPV dollars per kW: _____($ NPV/kW)

6. Estimated 10 year EES mature benefits in:
   a. NPV Dollars: $_____
   b. NPV dollars per kW: _____($ NPV/kW)

7. Estimated 10 year EES mature cost in:
   a. NPV Dollars: $_____
   b. NPV dollars per kW: _____($/kW of NPV)

8. List input assumption(s) which deviate from the standard assumption values defined in Attachment 14 and describe the rationale for using alternative input value(s):
   _____
   _____
   _____
   _____

9. Explain why the individual benefits are additive, including consideration of operational needs and contractual requirements that may cause conflicts:
   _____
   _____
   _____
   _____

Required Additional Input Values

1. Rationale for estimating 10 year mature storage cost: _____
   _____
   _____
   _____

2. Storage technology efficiency (roundtrip): _____%:

3. Storage technology variable O&M:
   $_____ (expressed in dollars per year)
   $_____ (expressed in NPV of 10 year period)

4. Quantification of the individual benefits (if more than one is included in the application) anticipated (expressed net present value of $/kW)

Benefit 1: Name:_____Benefit:____$/kW (NPV)

Benefit 2: Name:_____Benefit:____$/kW (NPV)

Benefit 3: Name:_____Benefit:____$/kW (NPV)

(Others as appropriate)

NOTE:

Provide complete rationale explaining how each of the above benefits were developed if not previously defined (provide a separate sheet if required):

_____

_____

_____

_____

NOTE: The total benefits allowed from all Power Quality Applications in the proposal are limited to no more than 30% of the total computed benefit amount.

Commercialization Path

<Explain the proposed commercialization path the proposed technology and demonstrated product is expected to follow:

- *Identify the proposed commercial product(s) that will emerge from this demonstration project and the expected time frame to commercialization.*
- *Identify any known or expected barriers to commercial acceptance and provide a brief characterization of the planned strategies to address these challenges.*
- *Identify any known or expected competitive commercial products or any alternative technologies that will impact the successful proposed commercial path.*
- *Identify any expected or known regulatory actions that will impact the commercialization of the proposed new products either positively or negatively.>*

Impact and Benefit for California

<Explain how the demonstration project and resulting commercial products will impact and benefit the California electricity ratepayers in areas such as increased California business opportunities, increased jobs in California, environmental, and other improvement areas based on the commercial acceptance of the demonstrated technology and new product(s). Do not duplicate financial and economic benefit information provided elsewhere in this proposal. >

Project Manager and Project Team

<Name the Project Manger who will be the Contractor's person who is primarily responsible for coordinating and managing the proposed entire demonstration project.

Address each of the following areas:

- *Describe the Project Manager's capabilities in managing an emerging technology field demonstration project. Include information on past experience in managing successful field demonstration Projects, knowledge of the proposed energy storage technology, knowledge of the proposed application and ability to adapt to the challenges that the field demonstration project presents.*
- *Identify project team past experience in the development and management of turnkey electric energy technology projects.*
- *Describe the process the Project Manager will take to effectively manage the proposed Project to achieve Project goals, including ensuring the management of the diverse tasks required are performed within the allocated budget and schedule.*
- *Describe how the Project Manager will coordinate the reporting of information to the Commission's Contract Manager, DOE, relevant business partners, and the interested stakeholders for the proposed demonstration project. >*

Project Team

<Describe the capabilities and experience of the proposed Project team.

- *Identify the primary person responsible for each major task or function of the proposed turn-key demonstration project. Also identify key personnel of the Contractor and subcontractors.*
- *Provide an organization chart for the proposed Project and provide resumes for each key member of the proposed Project team.*
- *Describe how the team will participate in Project management and how the Project Manager will be supported. Describe how project tracking, team communication, and budget management will be implemented. >*

Customer References

<Provide customer references using RFP Attachment 11 format. >

Letter from Servicing Utility

< Provide the follow letter signed by the appropriate individual:

- *Provide a letter from the proposed servicing utility stating they are aware of the proposed demonstration project and understand the grid interconnect requirements.*
    - *NOTE: If the Bidder is unable to obtain a signed letter from the servicing utility, then the Bidder must provide a detailed description of the utility grid interconnect plans and identify any obstacles expected in obtaining this interconnect approval. This plan must define all the actions required to obtain eventual approval for the proposed demonstration project to be commissioned and connected to the end user's or host's electrical grid in time to meet all proposed project schedules. >*

Data Acquisition and Reporting

<Provide a brief description on how the Data Acquisition and Reporting requirement will be met.

- *Explain the proposed data acquisition system that will be provided for the demonstration project.*
- *Explain how the required data monitoring elements will be collected, stored and transferred to the DOE Data Management Contractor.*
- *Explain how the require data acquisition reports will be provided.*
- *Identify who will be responsible for developing and presenting the technical papers required based on the performance information gather during the demonstration period.*
- *Explain how the economic data will be collected to validate the expected benefits and economic values defined elsewhere in the proposal.*
- *If the project includes multiple demonstration sites, explain and justify the number of sites that data will be collected and how the multiple site data will be integrated to develop total project performance data.>*

Project Funding

< Discuss the appropriateness of the amount of PIER funding requested for the proposed demonstration project relative to the work proposed and the anticipated public benefits to California electric ratepayers.

Describe the allocation of Project funds to project planning, testing, site installation, commissioning, data acquisition, performance reporting, project management, market actions, travel and other areas relative to the funds allocation. >

Project Match Funds

< Discuss the amount of cash match and in-kind match funds that will be brought to this Project. Discuss the ratio of match funds to PIER funding and how it reflects the ratio of private benefits to public benefits resulting from successful completion of the Project.

Discuss the sources of cash match and in-kind match funds (Bidder, team members who will receive PIER funds, and all other partners including investors, lenders, equipment manufacturers, utilities, universities, government entities or others.) Discuss the amount of match funds the end user or host will contribute. Identify whether match funds are in cash or in-kind services for each source of match funds. Identify each task to which match funds will be applied.

Discuss the relationship of the match funds to the successful completion of the Project. Discuss the impact of the loss of these contributions to the successful completion of the Project and to the public and private benefits that are expected from the Project's success. Rank each match fund commitment on a scale of Low, Medium and High, where Low means there is significant uncertainty of the match commitment being there when needed and High means that the match commitment is secure. Explain each ranking. >

Statement of Match Funds Commitment

<Document the commitment of each proposed match fund contribution. A letter of commitment is needed from an authorized representative of each individual, company or organization that is offering match funds. These letters of commitment must cover the entire period of the Agreement or explain why a shorter time is appropriate. >

RFP Attachment 13 (E)

Instructions for Agreement Exhibit E
Confidential Deliverables and Pre-existing Intellectual Property Lists

In the event the Contractor feels the project will include information claimed as confidential in a deliverable and shall be listing pre-existing intellectual property items, then please read the following instructions carefully before completing Exhibit E. The information provided by the Contractor will help the Commission in making a determination as to whether or not a confidential designation will be needed or allowed.

PART I: CONFIDENTIAL DELIVERABLES

1. Please check the appropriate box, either that there are or are not confidential deliverables as part of this Agreement. If there are, please adhere to the following instructions.

2. What is NOT a proper basis for confidential designation?

- Scope of Work (including task descriptions, schedule of deliverables, due dates)
- Proposed budgets
- DVBE information
- Names of employees, subcontractors and match fund participants
- Test plans and reports
- Progress reports
- Final reports

3. What is the proper basis for confidential designation?

A. Patent application number:

- The number will not be put in the agreement, only a reference to "patent application".
- The Contractor must submit the patent application number, which will be kept in a confidential file, to the Commission.
- Information already patented does not need confidential designation.

B. Trade Secrets, there are four types of trade secrets typically relevant to PIER agreements:

- Technical trade secrets
  (i.e. technical drawings or description of technology not patented);
- Business trade secrets
  (i.e. energy use data for an individual facility; pending strategic partnership with a manufacturer);
- Marketing trade secrets
  (i.e. market projections or strategies);
- Economic/financial trade secrets
  (i.e. product price and cost flow projections).

4. Complete the Chart Below

Three types of information must be provided for confidential deliverables: "Description of Information to be Kept Confidential", "Legal Basis for Confidential Designation", and "Term of Confidentiality".

A. Description of Information to be Kept Confidential
- Describe the technology in general terms that can be included in the agreement, which is a public document. Be specific enough to describe what needs to be kept confidential, without disclosing information that is a trade secret. Also include a description of any report/document that contains the trade secret, and the date of the document, if applicable.

B. Legal Basis for Confidential Designation
- Choose the appropriate legal basis (please see the example below).

C. Term of Confidentiality
- In general, the term of confidentiality is through the end term of the agreement. If the Contractor wants a longer term, the Contractor must identify a reason. In cases where a patent application is involved, the term is usually 3 years from the effective date of the agreement.

EXAMPLE:

Description of Information to be Kept Confidential: • **Title of document/name of deliverable** • **Date of document, if applicable** • **Task Number** • **Portion of document to be kept confidential** • **General description of the technology to be kept confidential**	**Legal Basis for Confidential Designation:** • **Patent application number** • **Trade Secret** **--Technical** **--Business** **--Marketing** **--Economic/Financial**	**Term of Confidentiality:** • **Through end term of agreement.** • **For patent application numbers, 3 years from effective date of agreement.**
• Confidential Technical Challenges Report • Date n/a • Subtask 2.1.1 • Entire document • Contractor is attempting to improve the efficiency and lower the cost of natural-gas-fired absorption chillers used to cool commercial buildings. This project will develop and test metal coatings, which are applied to low-cost steels to resist brine-caused corrosion. If effective, these coatings can make low-cost steels corrosion resistant, and absorption chiller components can be made of them, thereby lowering their cost. Energy efficiency would be improved by operating the chiller at high temperatures without risk of component corrosion.	The Commission determines that the report constitutes technical trade secrets, disclosure of which would deprive contractor of its competitive advantage.	The term of confidentiality will last through the end term of the contract (March 31, 2007).
• Patent application number	Patent application number	The term of confidentiality will last for three years

		from the effective date of this contract (July 1, 2006) by which time it is presumed that Contractor will have perfected its rights through the United States Patent Office.

PART II: PRE-EXISTING INTELLECTUAL PROPERTY

1. Please check the appropriate box, either that there is or is not pre-existing intellectual property as part of this Agreement. If there is, please adhere to the following instructions.

2. List intellectual property belonging to the prime Contractor and all subcontractors that existed before Commission funding begins.

3. List only Intellectual Property that will actually be used in performing the agreement. Do not list patents or trade secrets that are irrelevant to this agreement.

4. The reason for including this list is to determine royalty obligations. Royalty payments are triggered for technology that is sold only for the portion of the technology developed with Commission funds. If the technology used pre-existing Intellectual Property, then royalty obligations are not triggered.

EXAMPLES:

Patents Issued

Title	Patent Number	Inventor/ Assignee (Owner)	File Date	Issue/ Grant Date	Country	Description
Blue Light Emitting Diode Formed in Silicon Carbide	4,918,497	Cree Research, Inc.	12/14/88	4/17/90	USA	A light emitting diode formed in silicon carbide that emits visible light having a wavelength of between about 475-480 nanometers, or between about 455-460 nanometers, or between about 424-428 nanometers.

Patent Application*

Title	File Date	Public Description (2-3 sentences)
Optimal Portfolio Methodology for Assessing Distributed Energy Resources Benefits to the Energynet	9/1/02	This methodology has been developed as a detailed work plan for a demonstration based on the use of data for the SVP T&D network along with GE PSLF and Optimal's Aempfast system analysis packages. The work performed under this contract represents the first demonstration and use of this methodology.

*For Patent Application numbers submitted as a confidential deliverable, please see instructions for confidential deliverables.

Trade Secret

Title	Public Description (2-3 sentences)
Advanced Energy Management and Power Flow Analysis Systems Technology (Aempfast)	Aempfast consists of various software and hardware technologies, algorithms, and processes for optimization and analysis of electric power systems, which are complex, non-linear networks. Aempfast provides a set of power optimization and management tools that intelligently and simultaneously solve for competing objectives in the planning and operation of any power grid. There are diverse analytical features in Aempfast that can be used to address and apply many different constraints on a network, including both "equality constraints" and "inequality constraints", while optimizing the subject network.

Copyright

Title	Copyright Number	Owner	File Date	Issue/ Grant Date	Country	Description
RL23 Design Software	554455	Widgets R Us, Inc.	9/1/98	12/20/00	Canada	Software for design and customization of commercial water heating units in multiple story buildings

Trademark

Title	Trademark Number	Owner	File Date	Issue/ Grant Date	Country	Description
ENERGY STAR®	1999485	Environmental Protection Agency, Federal Agency, United States	4/12/95	9/10/96	USA	Typed drawing, service mark.

Disclosure Memos

Title	Disclosure Date	Memo Number, if Applicable	Public Description (2-3 sentences)
Reactor for converting hydrocarbon fuels to hydrogen	3/3/01	37654-2	Apparatus for utilization of the unmixed reforming process for the production of high purity hydrogen from diesel or strategic fuel. This invention will lock in the key design features needed for application of unmixed reforming to onboard applications such as automobiles or transportable power sources.

Invention Berkely
(DOE National Labs Only)

Title	Number	Date
Manufacturing Energy Efficient Roofing Tiles	IB 1723	9-20-89

RFP Attachment 13 (E)

Template for Agreement Exhibit E
Confidential Deliverables and Pre-existing Intellectual Property Lists

PART I: CONFIDENTIAL DELIVERABLES
Pursuant to 20 California Code of Regulations 2505(c)(2)(B), the Commission designates the following as confidential.

☐ **No Confidential Deliverables.**

Or

☐ **Confidential Deliverables:**

Description of Information to be Kept Confidential: • **Title of document/name of deliverable** • **Task Number** • **Portion of document to be kept confidential** • **General description of the Technology to be kept confidential.**	**Legal Basis for Confidential Designation:** • **Trade Secret** **--Technical** **--Business** **--Marketing** **--Economic/Financial** • **Patent application number**	**Term of Confidentiality**

PART II: PRE-EXISTING INTELLECTUAL PROPERTY
Contractor has identified the following intellectual property as pre-existing the effective date of this Agreement and is required for performance of this Agreement but is not a deliverable.

☐ **No Pre-existing Intellectual Property.**

Or

☐ **Pre-existing Intellectual Property (Please insert "none" in the types that do not apply):**

Patents Issued

Title	Patent Number	Inventors/ Assignee (Owner)	File Date	Issue/ Grant Date	Country	Description

Patent Applications

Patent application numbers must be submitted to the Commission per the instruction process for Confidential Deliverables in Exhibit E, Part I, Template Instructions.

Title	File Date	Public Description (2-3 sentences)

Trade Secrets

Trade secrets information must be submitted to the Commission per the instruction process for Confidential Deliverables in Exhibit E, Part I, Template Instructions.

Title	Public Description (2-3 sentences)

Copyrights

Title	Copyright Number	Owner	File Date	Issue/ Grant Date	County	Description

Trademarks

Title	Trademark Number	Owner	File Date	Issue/ Grant Date	Country	Description

Disclosure Memos

Title	Disclosure Date	Memo Number, if applicable	Public Description (2-3 sentences)

Invention Berkley
(DOE National Labs Only)

Title	Number	Date

RFP Attachment 13 (E)

Template for Agreement Exhibit E
Confidential Deliverables and Pre-existing Intellectual Property Lists

PART I: CONFIDENTIAL DELIVERABLES
Pursuant to 20 California Code of Regulations 2505(c)(2)(B), the Commission designates the following as confidential.

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Or

☐ **Confidential Deliverables:**

Description of Information to be Kept Confidential: • **Title of document/name of deliverable** • **Task Number** • **Portion of document to be kept confidential** • **General description of the Technology to be kept confidential.**	**Legal Basis for Confidential Designation:** • **Trade Secret** **--Technical** **--Business** **--Marketing** **--Economic/Financial** • **Patent application number**	**Term of Confidentiality**

PART II: PRE-EXISTING INTELLECTUAL PROPERTY
Contractor has identified the following intellectual property as pre-existing the effective date of this Agreement and is required for performance of this Agreement but is not a deliverable.

☐ **No Pre-existing Intellectual Property.**

Or

☐ **Pre-existing Intellectual Property (Please insert "none" in the types that do not apply):**

Patents Issued

Title	Patent Number	Inventors/ Assignee (Owner)	File Date	Issue/ Grant Date	Country	Description

Patent Applications

Patent application numbers must be submitted to the Commission per the instruction process for Confidential Deliverables in Exhibit E, Part I, Template Instructions.

Title	File Date	Public Description (2-3 sentences)

Trade Secrets

Trade secrets information must be submitted to the Commission per the instruction process for Confidential Deliverables in Exhibit E, Part I, Template Instructions.

Title	Public Description (2-3 sentences)

Copyrights

Title	Copyright Number	Owner	File Date	Issue/ Grant Date	County	Description

Trademarks

Title	Trademark Number	Owner	File Date	Issue/ Grant Date	Country	Description

Disclosure Memos

Title	Disclosure Date	Memo Number, if applicable	Public Description (2-3 sentences)

Invention Berkley
(DOE National Labs Only)

Title	Number	Date

RFP Attachment 14

Electric Energy Storage
Benefits and Market Analysis

Electric Energy Storage
Benefits and Market Analysis

Table of Contents

Definitions

Alternate Assumption – A value used to calculate benefits or market potential that is different than the respective Standard Assumption Value.

Alternate Calculation – A method used to calculate benefits or market potential that is different than the respective Standard Calculation.

Arbitrage – See Bulk Electricity Price Arbitrage.

Benefit – See Financial Benefit.

Beneficiaries – Entities to whom financial benefits accrue due to use of a storage system being demonstrated**.**

Bulk Electricity Price Arbitrage (Arbitrage) – Purchase of inexpensive electricity during off-peak periods when demand for electricity is low to charge the EES plant so that the low priced energy can be used or sold at a later time when demand/price for electricity is high.

C&I – commercial and industrial (energy end-users).

Carrying Charges – The annual financial requirements needed to service debt or equity capital used to purchase and to install the EES plant, including tax effects. For utilities this is the revenue requirement. See also Fixed Charge Rate.

Combined Applications – EES used for two or more compatible applications.

Combined Benefits – Sum of all benefits that accrue due to use of an EES system, irrespective of the purpose for installing the system.

Demonstration Benefit – The net present value of financial benefits that would accrue if the demonstration plant were to operate for ten years.

Demonstration Benefit/Cost Ratio (Demonstration B/C) – Ratio of Demonstration Benefit to Demonstration Cost.

Demonstration Project Cost – The financial resources ($) needed to design, purchase install, and operate the system over the study period.

Demonstration Lifecycle Cost – The net present value of financial benefits that would accrue if the demonstration plant were to operate for ten years.

Demonstration Lifecycle Cost includes 1) Demonstration Project Cost plus 2) costs incurred in "out years."

Discharge Duration – Total amount of time that the EES plant can discharge, at its nameplate rating, without recharging. Nameplate rating is the nominal full load rating, not "emergency," "short duration," or "contingency" rating.

Discount Rate – The interest rate used to discount future cash flows to account for the time value of money; also called the capitalization rate. For the RFP the standard assumption value is 10%.

Economic Benefit – Gross financial benefits that accrue to all beneficiaries using EES as demonstrated.

Efficiency (**Storage Efficiency**) – See Round Trip Efficiency.

EPRI – Electric Power Research Institute

Financial Benefit (Benefit) – Monies received and/or cost avoided by a beneficiary, due to use of EES.

Financial Life – This is the plant life assumed when estimating lifecycle costs and benefits. A plant life of 10 years is assumed for lifecycle financial evaluations in this document (i.e., 10 years is the standard assumption value).

Fixed Charge Rate – The Fixed Charge Rate is used to convert capital plant installed cost into an annuity equivalent (payment) representing annual carrying charges for capital equipment. It includes consideration of interest and equity return rates, annual interest payments and return of debt principal, dividends and return of equity principal, income taxes, and property taxes. The standard assumption value for fixed charge rate is 0.13 for utilities and 0.2 for non-utility owners.

Price Inflation Rate (Inflation) – The average annual rate at which the price of goods and services increases during a specific time period. For this RFP the standard assumption value for inflation is 2.5%/year.

Lifecycle – See Financial Life.

Lifecycle Benefits – Net present value of financial benefits that are expected to accrue over ten years for an EES plant.

Mature Benefit – The ten year net present value of financial benefits that would accrue from operation of EES plants like the one being demonstrated, under typical circumstances.

Mature Benefit/Cost Ratio (Mature B/C) – Ratio of Mature Benefit to Mature Cost.

Mature Cost – the mature cost for a system similar to the one proposed for a specific demonstration.

Market Estimate – The estimated amount of EES capacity (MW) that the Bidder expects to be installed over ten years in California. Estimates are for EES plants like those to be demonstrated. Market estimates reflect consideration of prospects for lower cost alternatives to compete for the same applications and benefits. (For context, the Market Estimate is a portion of the Maximum Market Potential.)

Maximum Market Potential – The maximum potential for actual sale and installation of EES in California, estimated based on reasonable assumptions about technology and market readiness and trends, and about the persistence of existing institutional challenges. It can also be thought of as the plausible market potential, in California, for a given program application. (For context, the Maximum Market Potential is a portion of the Market Technical Potential.)

Market Technical Potential – The estimated maximum possible amount of EES (MW and MWh) that could be installed over ten years in California, given purely technical constraints. For the RFP this is either 1) all load growth for most utility-owned EES systems, 2) system peak load for end-user applications, 3) the maximum amount of renewables generation for renewables-related applications.

Net Present Value Factor (NPV Factor) – A number used to convert an annual financial payment into the net present value for a series of such equal payments. A NPV factor is a function of a specific combination of a) investment duration (life), b) financial escalation rate (e.g., inflation), and c) discount rate. The standard assumption value for this criterion is based on a ten year life, 2.5% inflation, and 10% discount rate. The corresponding NPV factor is 7.17.

Plant Rating (Rating) – EES plant ratings include two primary criteria: 1) *Power*: nominal power output and 2) *Energy*: the maximum amount of energy that the system can deliver to the load without being recharged.

Revenue Requirement – For a utility, the amount of annual revenue required to pay carrying charges for capital equipment and to cover expenses including fuel and maintenance. See also Carrying Charges and Fixed Charge Rate.

Round Trip Efficiency – The amount of electric energy output from a given EES plant/system per unit of electric energy input.

Screen (Screen out) – Eliminate from consideration projects that do not satisfy legal and other administrative criteria or that do not meet minimum requirements for project benefit/cost, cost-sharing, or that exceed co-funding targets.

Standard Assumption Values (Standard Values) – Values provided by the Commission for use by Bidders when making the required standard calculations for benefits and for market potential. For example, financial benefits are calculated based on the following standard assumptions: a ten year lifecycle, 10% discount rate, and 2.5% annual inflation. See also Standard Calculations.

Standard Calculations – Calculation methodologies – used in conjunction with Standard Assumption Values – to calculate benefits and market potential. For example, the program team has established a Standard Calculation methodology for estimating Arbitrage benefits. See also Standard Assumption Values.

Storage Discharge Duration – See Discharge Duration.

Storage System Life (System Life) – the period during which the EES system is expected to be operated.

1. Introduction

1.a. About This Document

This document describes 1) electric energy storage (EES) applications that might be demonstrated, 2) the types of benefits that EES provides when used for the application and how to estimate their financial value, and 3) criteria for estimating market potential for the application.

Bidders should note that RFP Attachment 12 is an important companion document to this one. RFP Attachment 12 includes forms to be used by Bidders to document cost, benefit, and market values described below.

1.b. EES Program Mission

Demonstrate electric EES as a technically viable, cost-effective and broadly applicable option for reliable electricity system capacity and for electric energy management in California.

1.c. Philosophy

In general, it is the intention of this RFP to be consistent with the EES Program Mission. This attachment is to assist Bidders in preparing the information requested in this RFP that addresses market and benefit analysis.

The Commission has attempted to tailor a system that balances prudence with the cost to perform rigorous benefits assessments and market projections. The process was designed to be transparent and to require a reasonable level of rigor while emphasizing credibility of market and benefit estimates.

This document provides the standard assumptions for calculating the potential market size and benefits associated with EES plants.

The reason for providing that framework is twofold:

1. provide respondents to the RFP with helpful guidance about how to estimate benefits and market potential, and
2. to the extent possible, for fairness and to be practical, the EES demonstration selection process and framework have to be standardized, to allow for consideration of a variety of demonstrations using consistent bases.

As noted above, the Commission intends to be inclusive and to encourage innovation both with respect to technology and also to value propositions for EES, consistent with the Program Mission.

Given the need for use of consistent bases, standard assumption values are provided for most of the important criteria used for benefit calculations and

market estimates. However, Bidders may also provide results based on alternate assumptions and/or alternate calculation methods.

Whatever a Bidder chooses to do in this regard, to be responsive to the RFP they must provide all of the required data and information in the form requested.

Results based on alternate assumptions and/or alternate calculation methods must be documented by the Bidders, along with the rationale and the actual alternate assumptions and alternate calculations made.

1.d. Process Overview

Demonstration Benefit, Cost, and B/C Ratio

Figure 1 illustrates the process followed to estimate the benefit, cost, and benefit/cost ratio for the EES demonstration (Demonstration B/C ratio).

Once the application and site are selected, and the projected ten-year benefit is estimated. The demonstration costs established and the demonstration financial benefits are estimated.

- The demonstration project cost must be developed entirely by the Bidder, based on factors such as project site, application, EES discharge duration, all plant maintenance requirements, plant tear-down requirements, etc. It is the Bidders responsibility to ensure that all costs are clearly identified.

- The demonstration benefit is the net present value of all benefits that *would* accrue if the demonstration plant were to be operated for ten years. Note that even if the plant will not actually operate for ten years the demonstration benefit is estimated as-if the plant *will* operate for ten years.

One of the criteria used to screen proposals is the demonstration B/C ratio. It is calculated as the demonstration benefit divided by the demonstration lifecycle cost. The demonstration lifecycle cost is the sum of the demonstration project cost and the net-present-value of all costs that will or that would be incurred if the demonstration plant were to be operated in a manner needed to yield the demonstration benefit.

Consider an example. A demonstration will be installed, operated for two years, and dismantled for $1 Million. The ten year estimated benefit is $600,000 (net present value). The cost to operate EES for eight years beyond the period of performance for the Program is $250,000.
Benefit = $600,000
Cost = $1 Million + $250,000 = $1.25 Million
B/C ratio = $600,000 / $1.25 Million = .48

Important Note: a minimum demonstration B/C ratio of .3 is required if proposals are to satisfy the minimum demonstration B/C ratio screening criterion.

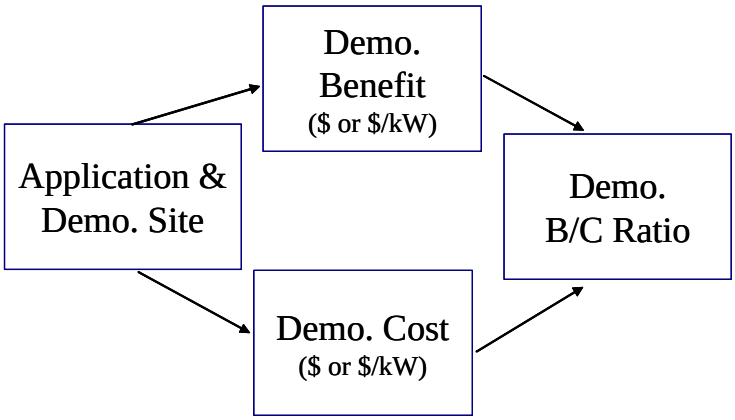

Figure 1. Process for Estimating Demonstration B/C Ratio

Mature Benefit, Cost, B/C Ratio

Figure 2 shows, conceptually, the process to estimate the mature B/C ratio, the market estimate, and the economic benefit to California.

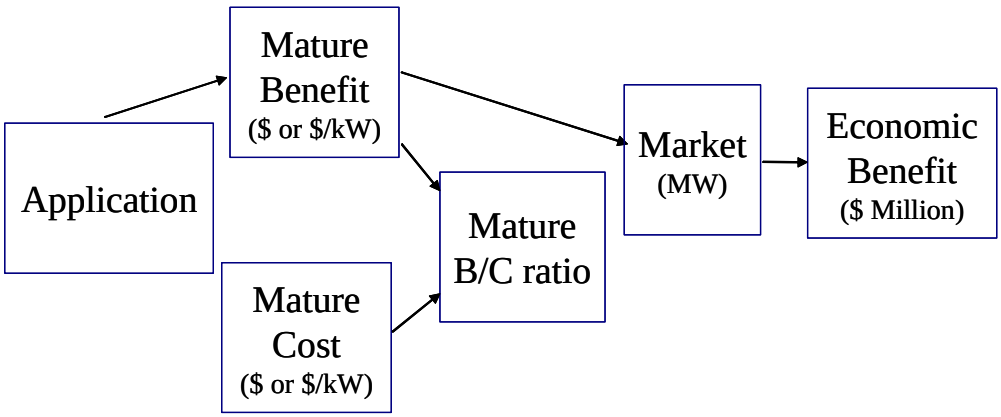

Figure 2. Process for Estimating Market Size and Mature B/C Ratio

First, after selecting an application, each of the presumed financial benefit or benefits associated with EES are summed to calculate the mature benefit. If more than one benefit is claimed then benefits must be reconciled with regard to time, technical, and institutional "conflicts."

Demonstration benefits (benefits specific to the demonstration plant) and mature benefits (those accruing to more typical situations in the future) may or may not be the same. If the demonstration plant's circumstances are typical then demonstration benefits would indeed be the same as mature benefits. If the demonstration circumstances are not typical or if a benefit claimed does not exist at present then the demonstration benefits and the mature benefits will differ.

Second, the mature cost of the EES technology (being demonstrated) is estimated. The mature cost is net present value of the entire cost to own and to operate the plant for ten years. It must be developed entirely by the Bidder based on factors such as the application being served, EES discharge duration, plant maintenance requirements (including overhauls), etc. It is the Bidders responsibility to ensure that all costs are clearly identified.

Finally, based on the mature (plant) benefit and mature cost, the mature benefit-to-cost ratio is calculated by dividing the mature benefit by the mature cost.

Important Note: a minimum mature B/C ratio of 1.0 is required if proposals are to satisfy the minimum mature B/C ratio screening criterion.

Market Estimate and Economic Benefit to California

A market estimate in megawatts (MW) is provided by Bidders for EES plants (like that being demonstrated). The estimate reflects the amount of EES that the Bidder will deploy, in California, over the next decade.

Finally, the total economic benefits that will accrue in California are estimated. That estimate is based on the mature benefits ($/kW of EES) times the market estimate (MW). As an example, for EES whose benefit is $600/kW and for which the market estimate is 200 MW, the total economic benefit is $120 Million.

1.e. Technical Notes

Compliance with All Applicable Safety and Electrical Rules and Standards

It is up to Bidders to verify that the demonstration plant design meets all applicable and relevant electrical, safety, and fire rules, regulations, and requirements. That includes all relevant power quality standards and utility interconnection rules and regulations.

Real, Apparent, and Reactive Power

For the purposes of this document, units of kW (real power) are used universally even though technically, kVA (apparent power) or even kVAR (reactive power) may be the most correct units. But given the degree of accuracy possible for the market and benefit estimations, the distinction between these units has relatively little consequence.

Nominal versus “Emergency” Power Rating

Some types of EES systems can discharge at a relatively high rate for relatively short periods of time (often referred to as “emergency” rating). For this RFP the discharge rate is the design rate or nominal rate.

For example, an EES device can operate at a nominal rate of 1 MW, for 3 hours at 80% efficiency. The same plant can provide 1.5 MW for up to ten minutes, at 65% efficiency. For this example, within this document, the plant power (rating) would be specified as 1 MW.

However, if a Bidder can show that there is a specific benefit associated with the ability to discharge at a higher rate for short periods, then the benefit may be included in the total benefits for the plant. As an example: EES used to reduce peak demand in one building with 1 MW of load could carry 500 kW of load from a second building during an outage, to allow enough time for an orderly shutdown of sensitive processes.

1.f. Summary of Key Standard Assumption Values

Table 1 below provides a summary of key standard assumption values for use in this RFP.

Table 1. Summary of Key Standard Assumptions

	Discharge Duration*				
Applications	Minimum	Highest	Lifecycle Financial Benefits ($/kW)	Maximum Market Potential (MW)	Ten-year Economic Benefits ($Million)**
Bulk Electricity Price Arbitrage	1	10	200 to 300	735	147 to 220
Distribution Upgrade Deferral 50th Percentile of Benefits	2	6	666	804	536
Distribution Upgrade Deferral 90th Percentile of Benefits	2	6	1,067	161	172
Transmission Upgrade Deferral	4	6	650	1,092	710
T&D Support	2 Seconds	5 Seconds	82	1,000	82
Customer Time-of-Use Energy Cost Management	2	see tariff	1,004	4,005	4,021
Customer Demand Charge Management	6	11	465#	4,005	1,862
End-user Electric Service Reliability	.25	5	359	4,005	1,438
Renewables Capacity firming	6	10	172##	1,800	310
Renewables Contractual Time-of-Production Payments	6	11	655##	500	326
T.O.U. Energy Rates Plus Demand Charge Reduction	6	11	866	4,005	3,468
Benefits					
Avoided Central Generation Capacity Cost	4	6	215	3,200	688
Ancillary Services	1	5	72***	800	58
Avoided Transmission Access Charges	1	6	72***	3200	230
Reduced PQ-related Financial Losses	10 seconds	1 Minute	717	4,005	2,872

*Hours unless other units are specified.

**Over ten years, based on lifecycle benefits times maximum market potential, market estimates will be lower.

*** Placeholder values. The acutal benefit was not estimated.

#Does not include incidental energy-related benefit.

##Wind generation.

2. Electric EES Applications

2.a. Applications Overview

This section describes the eight application types targeted by the program for demonstration.

For convenience, applications are grouped into three categories:
- Grid System
- End-user/Utility Customer
- Renewables

The eight applications (grouped by category) are

Grid System

1. Bulk Electricity Price Arbitrage
2. Transmission and Distribution Upgrade Deferral
3. Transmission and Distribution Support

End-user/Utility Customer

4. Time-of-Use Energy Cost Management
5. Demand Charge Management
6. Electric Service Reliability

Renewables

7. Renewables Capacity Firming
8. Renewables Contractual Time-of-production Payments

It is very important for Bidders to note the distinction made in this document between applications and benefits. Applications (listed above) are specific purposes for which EES is used. Benefits are the financial returns that accrue because EES is used. (In this document, a benefit may be a revenue stream or may be a cost that can be avoided if EES is used: an “avoided cost.”)

EES deployed to serve a specific application may provide multiple benefits. Specifically, a Bidder may be able to show that an EES system used for one of the nine applications targeted by the program for demonstration provides several types of financial benefits.

As an example: an energy end-user stores energy off-peak for discharge on-peak (the time-of-use electricity cost reduction application). As application name implies, the primary benefit is electric energy cost reduction. Depending on circumstances, the EES plant could provide another benefit: reduced demand charges. It could also provide benefits associated with improved electric service reliability or power quality.

2.b. General Technical Considerations

EES System Power Output Rating

EES output rating is circumstance-specific. The Bidder is responsible for designing a demonstration that provides enough power to serve the designated load, as needed, for applications being served.

EES System Discharge Duration

The EES plant discharge duration is, of course, an important criterion both with respect to technical viability for a given application and plant cost. It is the Bidder's responsibility to establish the appropriate discharge duration for their demonstration

EES System Minimum Reliability

Like power rating and discharge duration, EES system reliability requirements are circumstance-specific. The Bidder is responsible for designing a demonstration that provides enough power and is as reliable as necessary to serve the respective application.

2.c. Grid System Applications

Application #1. Bulk Electricity Price Arbitrage

Application Overview

Bulk electricity price arbitrage (arbitrage) involves purchase of inexpensive electricity available during periods when demand for electricity is low, to charge the EES plant, so that the low priced energy can be used or sold at a later time when the price for electricity is high. (Note: In this context, sales are mostly or entirely to end-users, though sales could be made to other entities via the wholesale/commodity electricity marketplace.)

Technical Considerations

For the arbitrage application the plant EES discharge duration is determined based on the incremental benefit associated with being able to make additional buy low – sell high transactions during the year versus the incremental cost for additional EES (discharge duration).

Section 4 of this attachment includes more details about the trade-off between the incremental benefit for additional discharge duration, given a plant with a specified variable maintenance cost and efficiency.

The minimum discharge duration for this application is one hour.

Though each case is unique, if the plant used for this application is in the right location and if the plant is discharged at the right times, it could also serve the

T&D Deferral Application and/or could provide transmission congestion relief, plus benefits for reliability and/or improved PQ and/or ancillary services.

Application #2. Transmission and Distribution Upgrade Deferral

Application Overview

Transmission and distribution (T&D) upgrade deferral involves delaying utility investments in transmission and/or distribution system upgrades by using relatively small amounts of EES.

Consider a T&D system whose peak electric loading is approaching the system's load carrying capacity (design rating). In some cases installation of a small amount of EES downstream from the nearly overloaded T&D node will defer the need for a T&D upgrade.

As a specific example: a 15 MW substation is operating at 3% below its "engineering rating" (often engineering rating is often 20% to 30% below nameplate rating, units are MW or MVA). Load growth is about 2%/year. Engineers plan to upgrade the substation next year by adding 5 MVA of additional capacity.

As an alternative, engineers will consider installing enough EES to meet the expected load growth for next year, plus an engineering contingency.

For the 15 MW substation, 2% load growth next year is about 300 kW of load growth. Adding a 25% contingency means that the EES plant would have to be about 375 kW. (In this example assume that the engineers believe that EES discharge duration of 2 hours is sufficient.)

The key concept is that a small amount of EES can be used to delay a large "lump" investment in T&D equipment. Among other effects, this approach 1) reduces overall cost to ratepayers, 2) increases utility asset utilization, 3) allows use of the capital for another important project, and 4) reduces financial risk associated with large lump investments whose capacity may never be used.

Technical Considerations

Discharge duration is a critical design criterion for the T&D deferral application. It is also challenging to estimate. It may require interaction with utility engineers, engineers that design and/or operate distribution systems. The standard discharge duration is assumed to be two hours.

In short, the EES must serve enough load, for as long as needed, to keep loading on the equipment at the respective T&D node below a specified maximum, at all times.

For most circuits the highest loads occur on just a few days per year, for just a few hours per year. Often the highest annual load occurs on one specific day whose peak is somewhat higher than any other day.

Depending on location and other circumstances, a plant used for this application could also serve the arbitrage and/or transmission congestion relief applications and/or may provide benefits for reliability and/or PQ and/or ancillary services.

Application #3. Transmission and Distribution Support

Application Overview

EES may be used to improve transmission and distribution systems' performance by compensating for electrical anomalies and disturbances such as voltage sag, unstable voltage, and presence of sub-synchronous resonance. The result is a more stable system with improved performance (throughput).

Generically this application may be referred to as transmission and distribution support (T&D support). The benefits from T&D support are very situation- and site-specific.

Table 2 lists and briefly describes ways that EES can provide such T&D support.

Table 2. Types of Transmission Support

Type	Description
Transmission Stability Damping	Increase load carrying capacity by improving dynamic stability.
Sub-Synchronous Resonance Damping	Increase line capacity by allowing higher levels of series compensation by providing active real and/or reactive power modulation at sub-synchronous resonance modal frequencies.
Voltage Control	1. Transient Voltage Dip Improvement Increase load carrying capacity by reducing the transient voltage dip following a system disturbance. 2. Dynamic Voltage Stability Improve transfer capability by improving voltage stability margins.
Under-frequency Load Shedding Reduction	Reduce under-frequency load shedding during large system disturbances through injection of real power.

Adapted from information provided by the Electric Power Research Institute [1] [2] [6]

Technical Considerations

To be used for T&D support, EES must be capable of 1) sub-second response, 2) operation at partial states of charge, and 3) many charge-discharge cycles.

EES used for this application must also be very reliable. Typical discharge durations for this application are between one and twenty seconds. For EES to be most beneficial as a T&D support resource it would provide real and reactive power. [6]

2.d. Customer/End-use Applications

Application #4. Time-of-Use Energy Cost Management

Application Overview

The time-of-use electricity cost management application (time-of-use application) involves EES used by energy end-users (utility customers) to reduce their overall costs for electricity. Customers charge the EES during off-peak time periods when electric energy price is low, then discharge the energy during times when on-peak (time-of-use) energy prices apply.

It is similar to arbitrage, though the prices paid for energy by the customer are based on the customer's tariff, rather than the prevailing wholesale price for electric energy.

For the example, PG&E's Small Commercial Time-of-use A-6 tariff was used. It applies during the months of May to October, Monday through Friday. Commercial and industrial electricity end-users whose power requirements are less than or equal to 500 kW are eligible for the A6 tariff.

As shown in Figure 3, energy prices are about 32 ¢/kWh on-peak (noon to 6:00 pm). Prices during partial-peak (8:30 am to noon and 6:00 pm to 9:30 pm) are about 15 ¢/kWh, and during off-peak (9:30 pm to 8:30 am) prices are about 10 ¢/kWh.

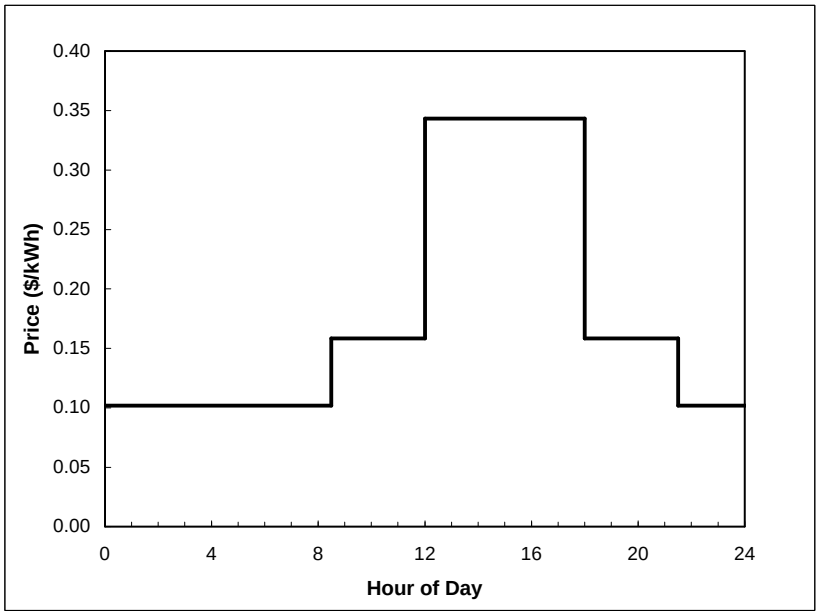

Figure 3. Summer Energy Prices for PG&E's Small Commercial A-6 Time-of-use Rate

Technical Considerations

The maximum discharge duration for this application is determined based on the relevant tariff. For example, for the A-6 tariff there are six on-peak hours (12:00 P.M. to 6:00 P.M.). The standard assumption for this application is six hours of discharge duration.

This application may be compatible with the energy arbitrage application and could provide ancillary services benefits, if end-users may participate in the wholesale energy marketplace.

Depending on overlaps between on-peak energy prices and times when peak demand charges apply, the same plant might also be compatible with the demand charge management application. It could also provide benefits associated with improved end-user PQ and reliability.

Similarly, depending on the plant's discharge duration and when discharge occurs, the EES plant may be compatible with the T&D deferral application and could also provide improved (grid) T&D support, if utilities are so motivated and are allowed to share related benefits.

Application #5. Demand Charge Management

Application Overview

EES could be used by energy end-users (utility customers) to reduce overall cost for electric service by reducing on-peak demand charges. To avoid demand

charges (associated with a given kW of peak load) customers must avoid using power during peak demand periods, which are the times when demand charges apply.

Typically demand charges apply during the summer months on weekdays. In order to avoid a monthly demand charge, load must be reduced during all on-peak hours. In many cases, if load is present for just one fifteen minute period, during times and months when peak demand charges apply, the monthly demand charge is not avoided.

As shown in Figure 4, energy end-users charge the EES during off-peak time periods when the electric energy price is low. The energy stored serves demand during times when demand charges apply. Typically, EES must discharge for five to six hours for this application, depending on provisions of the applicable tariff.

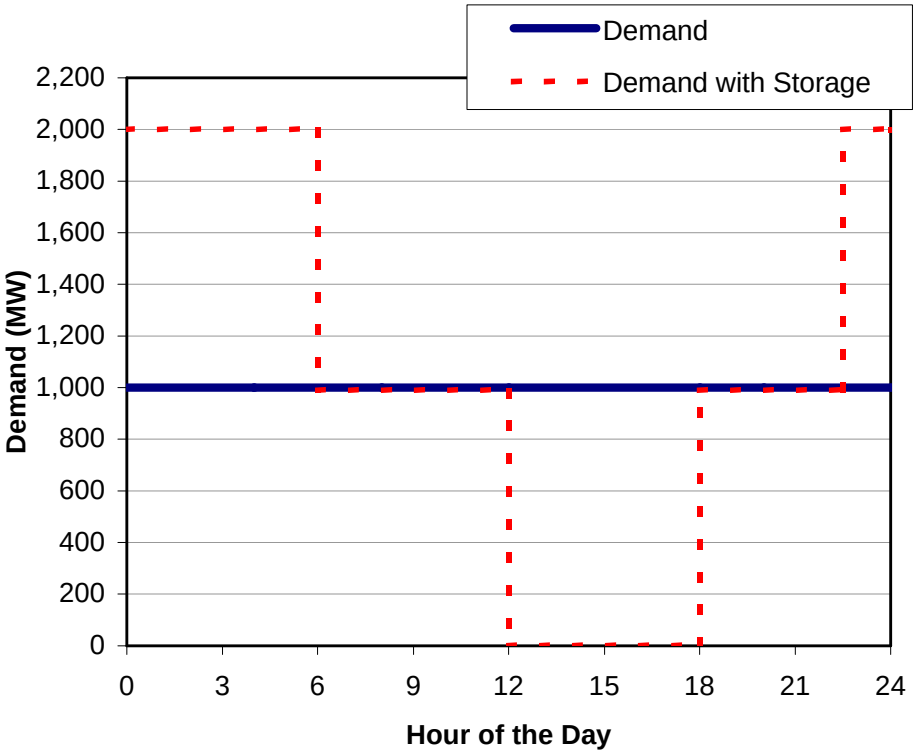

Figure 4. Demand Charge Reduction Using EES

The example shown in Figure 4 involves a load that is constant at 1 MW for three shifts. At night, when energy price is low, the facility's load (on the grid) essentially doubles: the batteries store energy at a rate of one MW and the normal demand from operations requires another MW of power. The EES

system is 80% efficient so to discharge for six hours it must charge for 6/80% = 7.5 hours.

Technical Considerations

For this application the EES plant discharge duration is driven by the applicable tariff. For example, for PG&E's E-19 tariff there are six on-peak hours (12:00 noon to 6:00 pm).

The standard assumption for this application is six hours of discharge duration.

Though each circumstance is different, a demonstration of this application may be compatible with the energy arbitrage application and could provide ancillary services benefits if end-users are allowed to participate in the wholesale energy marketplace.

This application may be also compatible with the T&D deferral application and could also provide T&D support, if utilities are motivated to and allowed to share related benefits. The times when demand charges apply must coincide with demand on the transmission and/or local distribution system.

The same plant might also be compatible with the time-of-use energy cost reduction application, if EES is discharging during the entire daily duration of the period when demand charges apply. The plant could also provide benefits associated with improved end-user PQ and reliability.

Application #6. Electric Service Reliability

The electric service reliability application is defined in broad terms: it entails the use of EES to provide high quality and highly reliable electric service for one or more adjacent facilities. The EES system provides enough energy for some combination of the following: an orderly shutdown of processes and/or transfer to on-site generation resources, high quality power needed for on-site, highly reliable service.

Application Overview

EES enables effective system integration of thermal, renewables, and even load control for power parks or small isolated grids.

- Power quality & high-value load reliability
- Voltage stability
- Startup/bridging a generator

Technical Considerations

The discharge duration required is based on complex set of criteria that are very situation-specific.

2.e. Renewables Applications

Application #7. Renewables Capacity Firming

Application Overview

For this application, EES is charged with energy from renewables during periods when demand for electricity is low (and thus the value of electricity is low), so that stored energy may be discharged during peak demand periods (when the value is high). This is done primarily to provide power (capacity) in lieu of central generation.

Typically this application involves a contract and/or power purchase agreement.

Technical Considerations

Depending on location EES used to firm up renewables generation could also provide other benefits: 1) revenues from or avoided cost for on-peak energy, 2) avoided/deferred need to build transmission capacity, 3) avoided transmission access or congestion charges, 4) transmission support, and 5) ancillary services.

Typically utility peak price periods extend from 12:00 noon to 6:00 pm on summer weekdays. Therefore, the assumed discharge duration for a capacity resource is six hours.

It is assumed that storage systems' power rating is equal to the nameplate rating of the power plant. For example, a 1 MW wind turbine is paired with a storage plant whose power rating is also 1 MW (irrespective of discharge duration). Project teams must explain the rationale used if storage power output differs from the nameplate rating of the generator.

Application #8. Renewables Contractual Time-of-production Payments

Application Overview

This application involves storing of electric energy from renewables during periods when demand for electricity is low (and thus value of electricity from renewables is low). The energy is discharged during peak demand periods when the value is high.

For the entity purchasing the energy this is done primarily to provide the energy in lieu of producing the same energy from a non-renewable central generation facility.

Typically this application involves a contract and/or power purchase agreement.

Technical Considerations

Depending on where the EES is located, if it is used in conjunction with bulk renewables resources then the benefits may also include: 1) avoided/deferred need to build or to purchase other generation capacity, 2) avoided/deferred need to build transmission capacity, 3) avoided transmission access charges, 4) avoided transmission congestion charges, 5) transmission support, and 6) ancillary services.

The discharge duration for this application is circumstance-specific. It depends mostly on the terms of the purchase agreement. The minimum discharge duration for this application is assumed to be two hours.

2.f Application-specific Discharge Durations

Table 3 lists application-specific standard assumption values for each program application.

Table 3. Application and Benefit-specific Standard Assumption Values for Discharge Duration

	Discharge Duration		
Applications	Minimum	Maximum	Note
Bulk Electricity Price Arbitrage	1 hour	10 hours	Primarly a function of: 1) incremental cost of adding storage versus incremental benefit (benefit from additional transactions) and to a lesser extent, 2) storage efficiency.
Distribution Upgrade Deferral 50th Percentile of Benefits	2 hours	6 hours	Situation-specific.
Distribution Upgrade Deferral 90th Percentile of Benefits	2 hours	6 hours	Situation-specific.
Transmission Upgrade Deferral	4 hours	6 hours	Situation-specific.
T&D Support	2 Seconds	5 Seconds	Location- and support-type-specific.
Customer Time-of-Use Energy Cost Management	2 hours	see tariff	Maximum discharge duration is based on the applicable tarrif.
Customer Demand Charge Management	6 hours	11 hours	Peak demand period (daily) is based on tarrif. Standard Assumption: Must operate from 12:00 P.M. to 6:00 P.M. on Summer weekdays.
End-user Electric Service Reliability	.25 hour	5 hours	Situation-specific.
Renewables Capacity firming	6 hours	10 hours	Situation-specific. Standard Assumption: need to operate storage from 12:00 P.M. to 6:00 P.M. on Summer weekdays for system; as few as two hours for distribution capacity.
Renewables Contractual Time-of-Production Payments	6 hours	11 hours	Standard Assumption: Could operate storage from 12:00 P.M. to 6:00 P.M. on Summer weekdays.
Benefits			
Avoided Central Generation Capacity Cost	4 hours	6 hours	Needed during peak load hours during peak load days.
Ancillary Services	1 hour	5 hours	Very circumstance, location, and ancillary service-type specific.
Avoided Transmission Access Charges	1 hour	6 hours	Very circumstance specific.
Reduced PQ-related Financial Losses	10 seconds	1 Minute	Very circumstance, location, and customer-type specific.

* Over ten years, in California.

3. Estimating Market Potential

A key facet to the Program is to demonstrate EES for applications with a significant market potential. (Significant is defined as at least 100 MW deployed over ten years in California.)

Given that criterion, there is a need to estimate market potential for EES plants to be used for the application being demonstrated. Included in proposals must be an estimate of the market size for EES systems similar to that being demonstrated (market estimate).

This section describes the philosophy used to estimate market potential and provides related guidance for Bidders to use when making the market estimate for the type of EES system to be demonstrated.

3.a. Market Estimation Approach and Philosophy

Market estimates should be as rigorous as needed to be credible, as judged by the evaluation team. Bases for estimates could include, for example, sales trends and projections, surveys, utility plans, or related market research.

As indicated by the outer square in Figure 5, the first step required when estimating market potential is to ascertain the technical market potential (or technical potential). That is the maximum amount (MW) possible given technical constraints. In California the technical potential is the state's total peak electric demand.

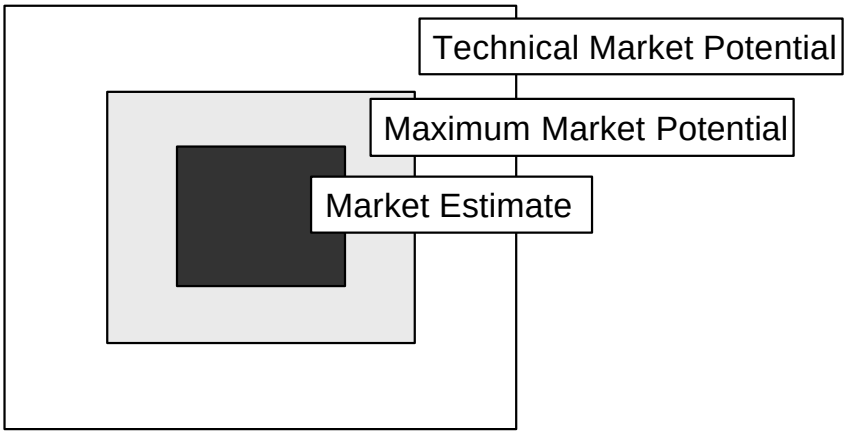

Figure 5. Market Potential and Estimate

Next, the maximum market potential is established, as an upper bound to the actual market potential. It is an estimate of the maximum possible demand given constraints that are practical or institutional in nature such as utility regulations

and practices. Maximum market potential is established without regard to EES cost.

Finally, Bidders must make a market estimate. The market estimate reflects the amount of EES that the Bidder expects to be deployed, over ten years, for the type of EES system being demonstrated. As shown in Figure 5, the market estimate is some portion of the maximum market potential.

3.b. California Electric Demand

A key parameter that underlies the maximum possible market size is the total electric load in California. For details please visit the California Energy Commission website for peak demand projections. The link below goes directly to an Excel spreadsheet with the projections.

http://www.energy.ca.gov/electricity/2003-01-28_OUTLOOK.XLS

The values in Table 4 below are from that document.

Table 4. California Peak Load and Load Growth

California Load, Beginning 2004	57,416 MW
Average Peak Load Growth Rate	2.5%/year
California Load, Ending 2013	73,498 MW
California Load Growth 2004 to 2013	16,081 MW

3.c. Maximum Market Potential for Applications

The maximum market potential is an upper bound to the market estimates. It is established by considering constraints (on market potential) that are practical and institutional. Maximum market potential is established without regard to EES cost.

Consider an example: given the premise that it is unlikely that EES will displace any existing utility equipment, a simplifying assumption (for utility applications) is that the market for new EES to serve electric load is limited to the annual load growth.

For specific applications, other practical or institutional limits on the maximum market potential apply. For example, if the application is for a commercial or industrial customer, then residential customers are not part of the maximum market potential.

A standard assumption value is provided for the maximum market potential for each of the nine applications targeted for demonstration by the program. Please see Table 5.

Table 5. Application and Benefit-specific Standard Assumption Values for Maximum Market Potential

	Maximum Market Potential*	
Applications	MW*	Note
Bulk Electricity Price Arbitrage	735	Maximum Market Potential is 1% of Load in 2013.
Distribution Upgrade Deferral 50th Percentile of Benefits	804	Premise: New capacity will not displace existing capacity with useful life. Ten percent of distribution system has peak load that is at or near the equipment's capacity: that is capacity "in-play." Load in-play is 1,608 MW. 50 percent of capacity in-play (804 MW) has annual carrying charges of $50/kW-year.
Distribution Upgrade Deferral 90th Percentile of Benefits	161	Premise: New capacity will not displace existing capacity with useful life. Ten percent of distribution system has peak load that is at or near the equipment's capacity: that is capacity "in-play." Load in-play is 1,608 MW. Ten percent of capacity in-play (161 MW) has annual carrying charges of $80/kW-year.
Transmission Upgrade Deferral	1,092	Assume one "Path 15-like" project statewide during study period: 3,900 MW. Maximum market potential is ten years' load growth (that new transmission line would satisfy, over ten years, if built). Assuming 2.5% load growth rate: 3,900 MW * (1 - ((1.025)^10)) = 3,900 MW * .28
T&D Support	1,000	Estimated based on research by the Electric Power Research Institute.
Customer Time-of-Use Energy Cost Management	4,005	2/3 of state total peak demand is from Industrial/Commercial Loads. => 2/3 * 57,416 (peak load in 2,004) = 38,278 MW in-play. 1% / year "market adoption rate."
Customer Demand Charge Management	4,005	Same as above.
End-user Electric Service Reliability	4,005	Same as above.
Renewables Capacity firming	1,800	Existing wind generation capacity in California.[5]
Renewables Contractual Time-of-Production Payments	500	Qualifying SO4 contracts, wind generation.
Benefits		
Avoided Central Generation Capacity Cost	3,200	Assume 20% of load growth is for non-baseload generation. 16,000 MW * .2 = 3,200 MW. (Assume that the balance of load growth is served primarily by new combined cycle capacity and by some additional renewables capacity.
Ancillary Services	800	PG&E uses a power plant rated at 1,000 kW (e.g. Pittsburg 7) to regulate load of about 20,000 MW. 1,000 MW / 20,000 MW = 5% of total load. 5% * 16,000 MW of load growth = 800 MW.[15]
Avoided Transmission Access Charges	3,200	Assume 20% of load growth. 16,000 MW * .2 = 3,200 MW.
Reduced PQ-related Financial Losses	4,005	2/3 of state total peak demand is from Industrial/Commercial Loads. => 2/3 * 57,416 (peak load in 2,004) = 38,278 MW in-play. 1% / year "market adoption rate."

* Over ten years, in California.

In addition to the actual maximum market potentials, the table contains notes about the rationale used to set those values.

These standard assumption values were developed based on a blend of subjectivity, judgment and facts (data). It is believed that they are reasonable, however, some Bidders may have better information, insights, or understanding of the applications targeted for demonstration. If so, Bidders may develop their own estimates for maximum market potential. However, the onus is on Bidders to provide a credible rationale for those alternate assumption values.

3.d. Making the Market Estimate

The final step in the market estimation process is to estimate the portion of the maximum market potential that will be realized during the ten year lifecycle period for the program – the market estimate. Market estimates must be provided for each demonstration.

Bases for market estimates could include, for example, sales trends and projections, surveys, utility plans, or related market research. Criteria that affect market estimates for EES include systems include, among others: system cost (capital, installation, O&M, etc.), efficiency, marketing costs, and market adoption rates.

Whatever criteria are used, market estimates should developed using a methodology that is as rigorous as needed to be credible, as judged by the evaluation team. The project evaluation team will base their determination – about the credibility of the estimate – on the rationale, assumptions, data, and calculations used to make the estimate.

Market Estimates: EES must be Cost-effective

For this RFP, the mature 10-year lifecycle benefit determined by the Bidder must be equal to or greater than the mature 10-year lifecycle cost to be considered cost effective.

Market Estimates: EES must be Cost-competitive

As described in Section 4 of this attachment, benefits associated with use of EES are estimated irrespective of the specific solution being considered. It is important to note that the competitiveness of a given solution depends on whether there is a lower cost and otherwise viable option.

When establishing the market estimate it is very important to account for the fact that solutions whose cost is not competitive are not attractive candidates for demonstration by the program. Specifically, EES systems whose mature cost exceeds the cost of another technically viable option (i.e., can provide the same “utility”) then the EES system to be demonstrated is not a viable solution.

Market Estimates for Combined Applications and Benefits

In many cases, EES may be used for more than one application (combined applications) or EES used for a specific application may provide more than one financial benefit (combined benefits). (Financial benefits are described in Section 4 of this attachment.)

When making market estimates for these circumstances it is important that these estimates account for the fact that combining of applications or benefits probably increases EES system benefit ($/kW) but may reduce the overall market potential.

Consider an example: an EES plant is used for the distribution upgrade deferral application. If demonstration teams also include benefits for enhanced electric service reliability, then the estimated market is the intersection between the market estimate for distribution deferral and the market estimate for reliability enhancement. That is, only feeders needing upgrading and having reliability-sensitive loads would be candidates for this combined application.

This concept is illustrated graphically in Figure 6.

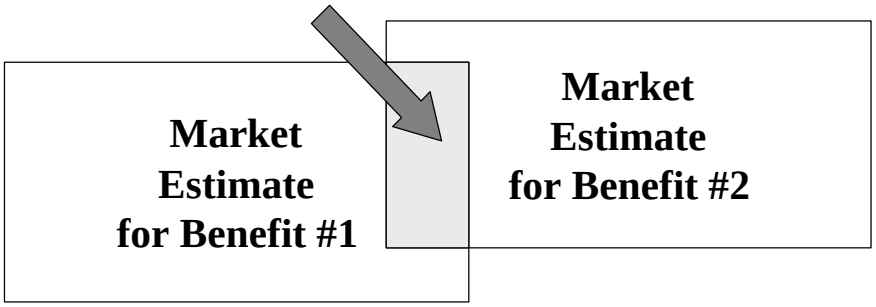

Figure 6. Market Estimation for Combined Benefits: Market Intersection

Proposals must show how Bidders took these considerations into account. Technical scores will reflect how well Bidders addressed this issue.

4. EES Benefits, Financial Viability, and Economic Value

A market and value based evaluation will be used as a partial means to select demonstrations. Such an approach involves an evaluation of the financial viability and economic contribution of EES used for the respective application.

This section discusses the calculation of: 1) financial benefits, in $/kW of EES, 2) mature benefit/cost ratio, and 3) total economic benefits (over ten years). Note that the mature benefit/cost ratio is based on estimated benefits (described below) and EES cost which must be estimated by Bidders. Cost estimates are made based on EES requirements needed for specific applications and benefits.

4.a. Overview

The primary focus of this section is on estimating financial benefits associated with EES used for a given application or combination of applications.

Specific types of benefits considered include:

Benefit 1. Revenue from Bulk Energy Arbitrage
Benefit 2. Deferred Transmission and/or Distribution Upgrade Investment
Benefit 3. T&D Support Benefits
Benefit 4. Reduced Time-of-Use Energy Cost
Benefit 5. Reduced Demand Charges
Benefit 6. Reduced Reliability-related Financial Losses
Benefit 7. Increased Revenue from Renewables Capacity Firming
Benefit 8. Increased Revenue from Renewable Energy Time-shift
Benefit 9. Avoided Central Generation Capacity Cost
Benefit 10. Ancillary Services Benefits
Benefit 11. Avoided Transmission Access Charges
Benefit 12. Reduced PQ-related Financial Losses
Benefit 13. Incidental Energy Benefits

Benefit types one through eight in the list above correspond directly to a specific application type. For example, revenue from energy arbitrage is associated with the arbitrage application.

Benefits nine through thirteen in the list are not associated with a specific application though they may apply in specific cases. One example is the power quality (PQ) benefit. Power quality is not an application for the RFP. It is, however, a benefit that may be incidental to use of EES for the demand charge reduction application. Another example is the financial benefit associated with

the incidental energy discharged by EES while it serves another application, primarily capacity applications.

Mature Financial Benefit

The mature financial benefit (mature benefit) is the total lifecycle financial benefit associated with use of a commercially mature version of the EES plant being demonstrated.

For this document the standard assumption value for EES system life is ten years. Mature financial benefit is expressed as the net present value of annual benefits, for the ten year life of the plant, in units of $/kW of EES.

If benefit streams vary from year-to year then year-by-year cashflows may be used. If so, it is important to use the same financial bases as those used when estimating benefits. Such non-standard assumptions and calculations must be documented.

If more than one benefit accrues then mature benefits are the sum of individual benefits. Bidders must specify how they qualify and account for multiple benefits.

Mature EES Cost

This document does not address calculation of the cost to own and to operate EES. It is the responsibility of Bidders to develop cost estimates for a mature plant like the one being demonstrated.

It is important for Bidders to include all costs commensurate with the benefits claimed. For example, lifecycle costs must include the net present value of overhauls required (such as cell or electrolyte replacement) for a mature plant like the one being demonstrated, for the assumed plant life.

Of course, mature EES costs must be calculated using financial bases that are consistent with those used to calculate benefits. Specifically they must reflect the cost to own and to operate the EES plant using the same financials (price escalation and discount rate), plant life, and the same plant operational mode as that assumed when estimating mature benefits.

Financial Viability -- Mature Benefit-to-Cost Ratio

The mature benefit cost ratio is calculated by dividing mature benefits by the mature plant cost.

Total Economic Benefit

Total economic benefit in California is the market estimate (described in Section 3 of this attachment) multiplied by the mature financial benefits.

Consider an example: a market estimate of 200 MW over ten years and mature benefits of $700/kW of EES. The total economic benefit is:

200 MW * $700/kW = 200,000 kW * $700/kW
= $140 Million.

4.b. Financials

For scoring and selection of demonstration proposals it is important that the team have means to evaluate proposed demonstrations using common financial bases. The following sub-sections briefly describe specific financial criteria to use for financial evaluations (i.e., to calculate benefits), including relevant standard assumption values.

Demonstration Lifecycle Benefits

These values are used to estimate the typical amount of total benefits associated with the type of system/application being demonstrated.

Financial Life

For this RFP, a plant life of 10 years is assumed for lifecycle financial evaluations. However, Bidders with compelling reasons to use another plant life may do so as long as it does not exceed 10 years.

Price Escalation

For this RFP, a general price escalation of 2.5% is assumed. Electric energy and capacity costs and prices are assumed to escalate at that same rate during the EES plant's financial life.

Discount Rate for NPV Calculations (Discount Rate)

For this RFP, the discount rate is 10%. It is used for making net present value calculations to estimate lifecycle benefits.

Calculating NPV

The net present value of a given stream of cashflows is a function of the price/cost escalation and the discount rate assumed. From above, for all costs and prices the standard (cost/price) escalation rate is 2.5% per year and the standard discount rate is 10%. A mid-year convention is used.

Based on the foregoing, a "net present value factor" (NPV factor) is calculated. That value is used to convert a single/first year value into a net present value. Given the standard assumption values of 2.5% standard cost/price escalation rate, 10% for discount rate, and ten years for EES life the standard assumption value for the NPV actor is 7.17.

Consider an example: for an annual/first year benefit of $100/kW-year the lifecycle benefit is:

$100/kW year * 7.17 = $717/kW.

Implicit in the example above is the assumption that annual benefits for all ten years considered are the same as the first year except that the cost or price escalates at 2.5%. If that approach is not appropriate, then the Bidder may submit an actual cashflow evaluation to estimate the lifecycle benefits using a 2.5% escalation, 10% discount, and a 10 year life.

Annualized Utility Cost Using Fixed Charge Rate

A fixed charge rate is used to convert capital plant installed cost ($/kW) into annual charges that are equivalent to annuity payments. That is, equal payments made during each year of equipment's financial life. That annuity equivalent is used to represent the annual carrying charges associated with ownership of capital equipment, in this case EES systems.

The fixed charge rate includes consideration of interest and equity return rates, annual interest payments and return of debt principal, dividends and return of equity principal, income taxes, and property taxes. The standard assumption value for fixed charge rate is 0.13 for utilities and 0.2 for non-utility owners.

4.c. Calculating Benefits

Benefit #1 Revenue from Bulk Energy Arbitrage

Introduction

Arbitrage involves purchase of inexpensive electricity available during periods when demand for electricity is low, to charge the EES plant, so that the low priced energy can be used or sold at a later time when the price for electricity is high. (Note, in this context "sales" are mostly or entirely to the utility's end-users, though in more general terms sales could be made via a deregulated wholesale/commodity electricity marketplace.)

To estimate the arbitrage benefit, a dispatch algorithm is used. It has the logic needed to determine when to charge and when to discharge EES, to optimize the financial benefit. Specifically, it determines when to buy and when to sell electric energy, based on price.

Three data items are used in conjunction with the dispatch algorithm. They are:

1. chronological hourly price data for one year (8,760 hours)
2. EES round trip efficiency
3. EES system discharge duration

Algorithm for Estimating Annual Benefits from Arbitrage

In simplest terms the dispatch algorithm evaluates a time series of prices to find all possible "transactions" in a given year that yield a net benefit (i.e., benefit

exceeds cost). The algorithm keeps track of net benefits from all such transactions for the entire year to estimate annual arbitrage benefits.

A discussion of how to convert that annual arbitrage benefit to a lifecycle/net present value is described below.

Energy Prices

For this document the chronological hourly price data used were the projected hourly electric energy prices, in California, for 2004.[12] Figure 7 below shows prices for the entire year of 2003. Note that there are about fifty hours when the price is above $100/MWh (10¢/kWh). During off peak periods (when EES plants are charged) the price is frequently at about $30/MWh (3¢/kWh).

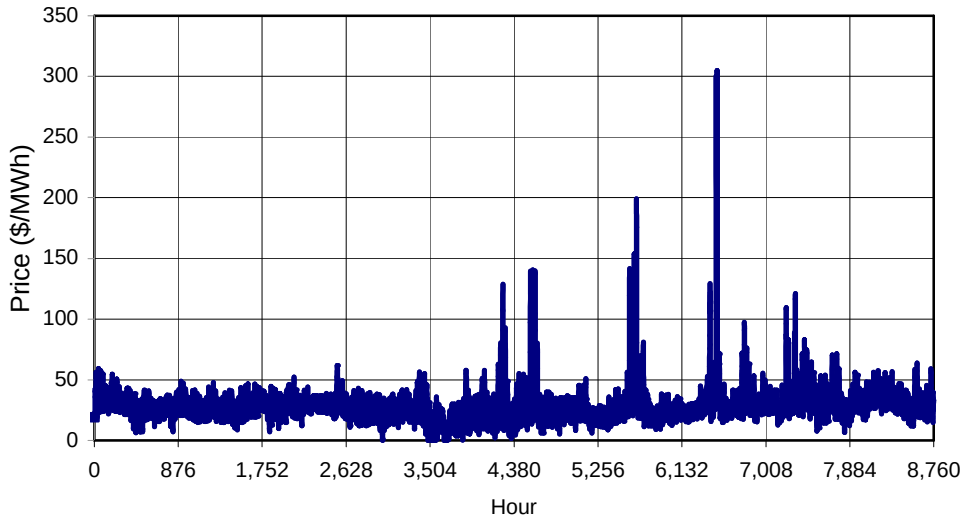

Figure 7. Chronological Electricity Price Data, for California, 2003 (projected)

Arbitrage Annual Benefit

As described above, the EES dispatch algorithm is used to estimate the arbitrage benefit for a given year. Estimates are made for EES plants whose discharge duration ranges from 1 hour to ten hours. Figure 8 below shows estimates for EES plants whose efficiency is 90%.

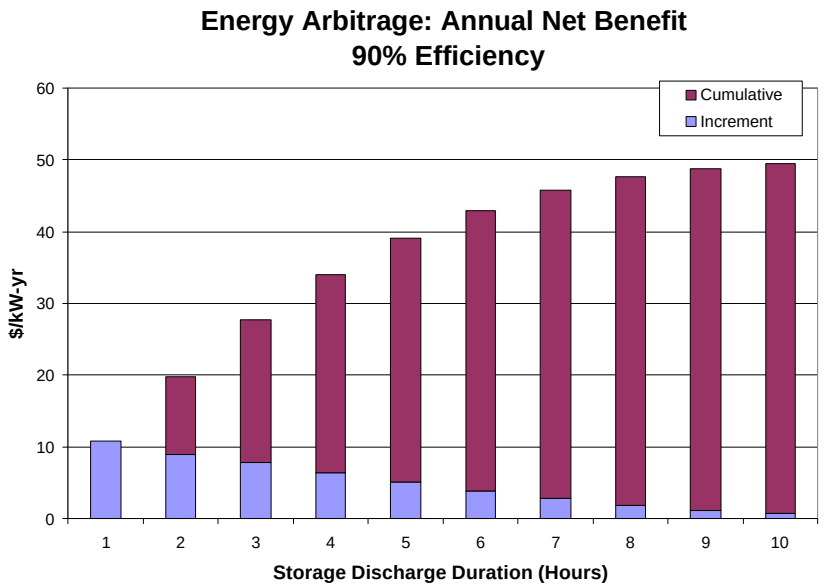

Figure 8. Annual Arbitrage Benefit in California, in 2003, for 90% Efficient Storage, for Discharge Durations Ranging from One Hour to Ten Hours

As shown in Figure 8, as hours of storage discharge duration are added to a EES plant, the incremental and total benefits increase and then begin to level off. That reflects diminishing benefits per buy low – sell high transaction (i.e., the average price differential diminishes as more and more transactions occur during the year.)

Arbitrage Lifecycle Benefit

The values calculated above are for one year of arbitrage benefits. For the RFP the EES plant is assumed to have a useful life of ten years. To convert the one-year value to net present value (NPV) the first year benefit is multiplied by the net present value factor of 7.17.

Consider an example. From Figure above, for a 90% efficient EES system with four hours of discharge duration the annual benefit is about $34/kW. Multiplying $34/kW-year by the standard assumption value for the NPV factor (7.17) yields a lifecycle NPV benefit of $34 * 7.17 = $245/kW.

The lifecycle benefit for EES with discharge durations ranging from one hour to ten hours are shown in Figure 9 below, for EES plants whose efficiency is 30%, 50%, 70% and 90%.

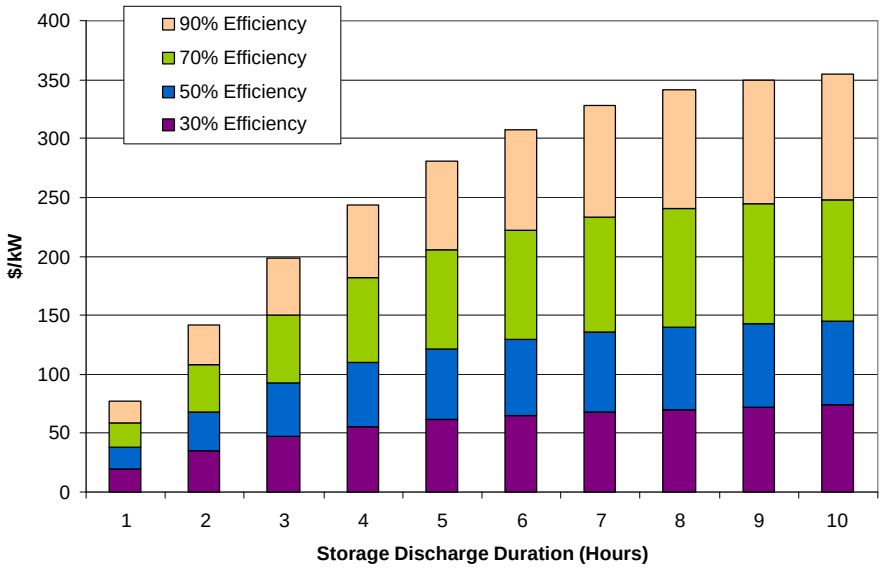

Figure 9. Lifecycle Arbitrage Benefit in California, in 2004, for 30%, 50%, 70% and 90% Efficient Storage, With No Variable Maintenance Cost for Discharge Durations Ranging from One Hour to Ten Hours

To illustrate the concept of converting a one-year arbitrage benefit to a lifecycle, note that the top of the bar (plot) for EES systems with four hours of discharge duration corresponds to lifecycle benefits of about $245/kW. That value is the lifecycle benefit for the EES plant with four hours of discharge duration that is 90% efficient, as shown above.

Arbitrage Net Benefit

The results above do not account for variable costs associated with EES . To do that, ideally the dispatch algorithm includes the variable cost in the math/logic used to decide when/if to charge the battery. However, of course O&M for each EES technology and even different configurations of the same technology are different.

Consider a simple example. A kiloWatt-hour of energy costing 3¢/kWh is stored in a 70% efficient EES plant that has a variable maintenance cost of 2¢/kWh of discharge. When discharged the energy is worth 20¢/kWh.

So 20¢/kWh is the gross revenue that accrues to the EES plant owner when the sale is made. However, the energy cost must be subtracted to calculate the net revenue.

First, consider the cost for the charging electricity. In the example the purchase price for electricity to charge the EES plant is 3¢/kWh. If the EES plant is 70%

efficient then 30% additional energy must be purchased to make up for the losses. The result is a net charging cost of (3¢/kWh /.7) = 4.3¢/kWh.

When adding consideration of the variable operation cost (2¢/kWh in the example), the net revenue from the example transaction is:

20¢/kWh - 4.3¢/kWh - 2¢/kWh
= 20¢/kWh - 6.3¢/kWh
= 13.7¢/kWh

The Bidder is responsible for including these effects in their estimates of arbitrage benefits for EES plants like the one being demonstrated.

Figure 10 and Figure 11 below provide lifecycle benefits for EES plants whose variable operation cost is 1¢/kWh and 2¢/kWh respectively.

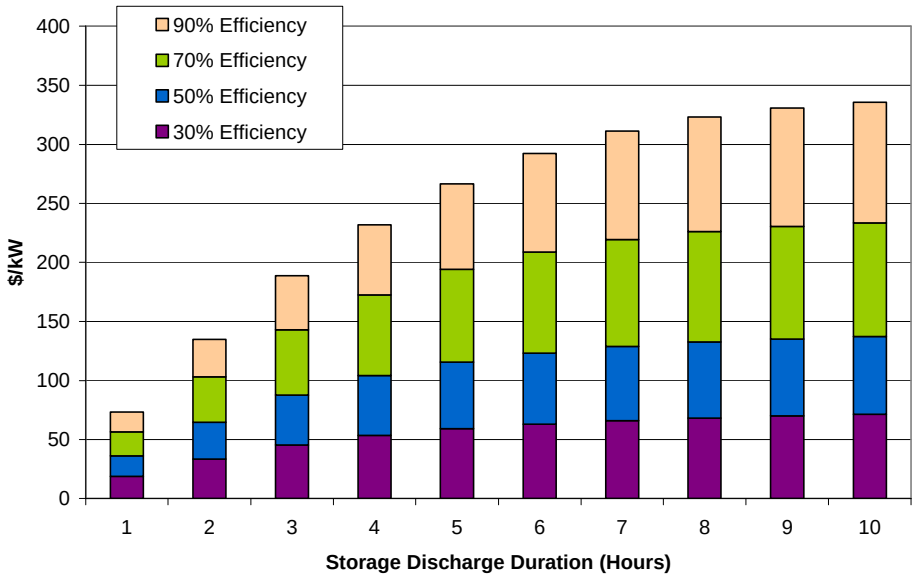

Figure 10. Lifecycle Arbitrage Benefit in California, in 2004, for 30%, 50%, 70% and 90% Efficient Storage, With Variable Maintenance Cost of 1¢/kWh for Discharge Durations Ranging from One Hour to Ten Hours

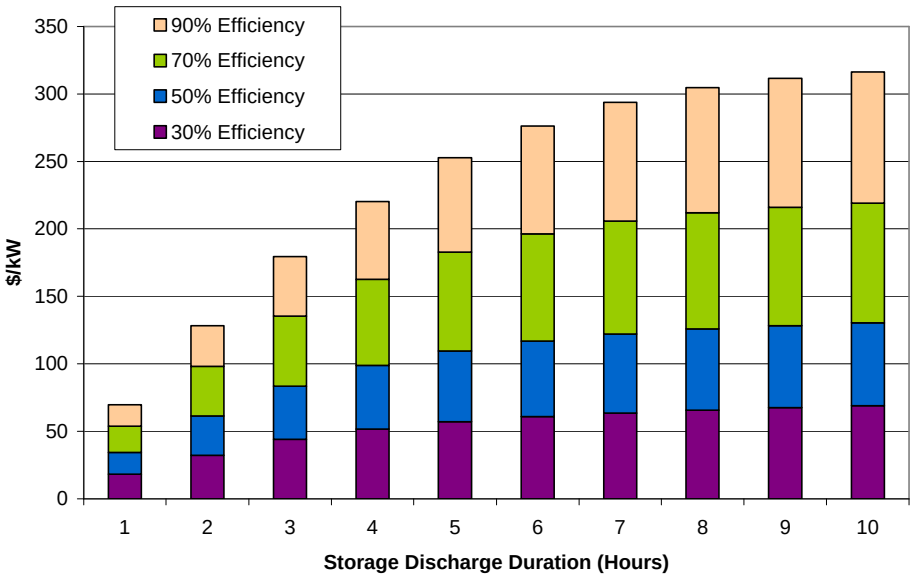

Figure 11. Lifecycle Arbitrage Benefit in California, in 2004, for 30%, 50%, 70% and 90%Efficient Storage, With Variable Maintenance Cost of 2¢/kWh for Discharge Durations Ranging from One Hour to Ten Hours

Benefit #2 Deferred Transmission and/or Distribution Upgrade Investment

T&D Upgrade Deferral Benefit Overview

A transmission and distribution (T&D) upgrade deferral benefit (deferral benefit) is the financial value associated with deferring a utility T&D upgrade for one or more years.

For each year of deferral, the deferral benefit (financial carrying charges) is calculated by multiplying the annual utility fixed charge rate times the total installed cost for the upgrade.

Consider a simple example: a distribution upgrade of 3 MVA that costs $1.15 Million. If the utility fixed charge rate is 0.13 then the single year deferral benefit is 0.13 * $1.15 Million or about $150,000.

Locations for which distributed resources, including distributed EES, are best suited for T&D deferral are those characterized by:

- infrequent and “peaky” maximum load days (i.e., peak load occurs only during a few hours in a day)
- slow load growth
- T and/or D upgrades required are “lumpy” (i.e., for one or a few years a small amount of storage can defer a relatively large investment
- high transmission access charges (that can be avoided with distributed resources)

EES Power Output Requirements

To defer an upgrade for one year it is assumed that the EES plant power output is equal to the expected load growth. (Of course that assumption is ideal, and does not account for uncertainty, primarily: a) load may grow more than expected, or b) the EES may fail on peak demand days.)

Consider the example illustrated in Figure 12. Assume that the distribution node being evaluated is currently rated at 9 MW and that load growth on the circuit occurs at about 2.5% per year.

Furthermore, as shown in the figure, at the end of 2007 loading will equal the distribution equipment’s load carrying capacity. During the year 2008 load growth is expected to be 9 MW * .025 = 225 kW.

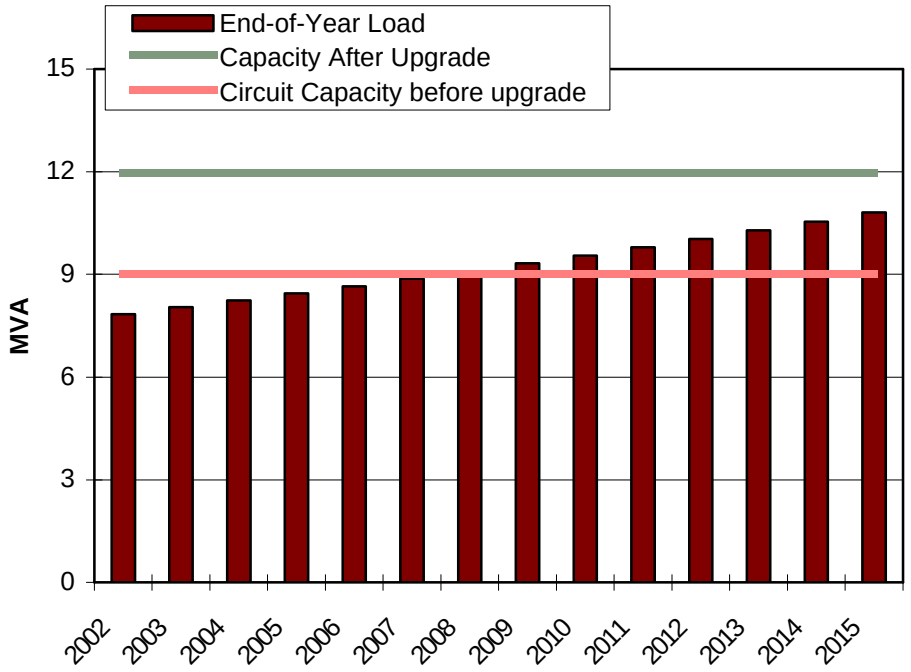

Figure 12. Distribution Peak Load, Capacity, and Upgraded Capacity

So, in theory, an EES plant rated at 225 kW that can meet load growth in 2007 and thus if deployed at the end of 2006 could allow the utility to defer the distribution upgrade for one year. Of course, an engineering contingency may be in order. That is, it may be that distribution engineers believe that load growth may exceed 225 kW in a given year. If so, EES oversizing may be indicated.

EES Discharge Duration Requirements

This section is a brief description of one possible process used to estimate the EES discharge duration required for T&D deferral. Discharge duration is the amount of time that the EES plant must be able to discharge at full power.

Measured demand data for respective cases is used to make the estimate. The hourly load profile for the day with the highest measured demand is isolated from the load data.

The maximum load on that day is treated as if it is the maximum rated (nominal) capacity of the distribution system node being evaluated. When load growth for a single year is added to that day's load, by definition, the top of the modified load profile exceeds the demand ceiling. This is illustrated in the example in Figure 13. The figure in the upper left shows load in "year 0," the year before the distribution capacity is expected to be loaded up to its rating. The lower right figure shows load after one year of load growth. The darker elements of bars for hours 18 and 19 in that day indicate that the load is exceeding the rating of the 9 MVA circuit.

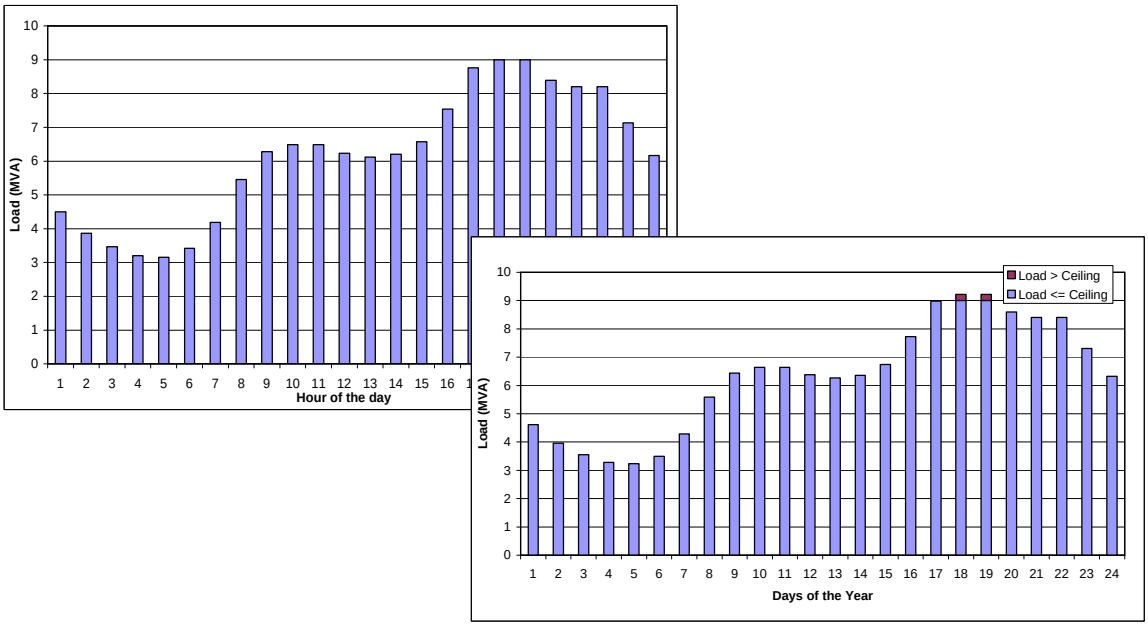

Figure 13. EES Sizing to Meet Peak Demand:
Energy Requirements for a Single Year's Load Growth

The number of hours during which load exceeds the demand ceiling is the EES duration. Even if the load ceiling is exceeded by just a small margin during a specific hour of the day, an entire hour of "full load" discharge is assumed to be required for the EES plant. This is intended to reflect conservative engineering design.

In the example in Figure 13, 2.5% load growth is added to the "year 0" demand profile. The result is that load, in "year 1" exceeds the demand ceiling on the distribution node for two hours. That is assumed to be the minimum EES duration required, for this example. When addressing engineering contingencies it may be prudent to make the discharge duration longer.

Financial Cost for Distribution Upgrades

As a way to generalize benefits associated with EES for T&D deferral the annual utility benefit is expressed in units of $/kW per year. This represents the utility cost to own and to operate one kW of T&D capacity for one year.

Annual cost per kW values (in units of $/kW-year) are derived as follows.

For California, in 50% of locations that will require distribution upgrades in any given year, deferral benefits are $381/kW.[4] [7] To convert that to annualized costs (units of $/kW-year) the utility's fixed charge rate of 0.13 is applied to calculate utility annual revenue requirements (i.e., financial carrying charges.)

So for a distribution upgrade costing $381/kW installed the one year carrying charges are 0.13 * $381/kW = approximately $50/kWyear.

Additionally, for 10% of locations requiring upgrades, cost exceeds about $608/kW.[4] The resulting single year carrying charges are 0.13 * $608/kW = approximately $80/kW-year.

Financial Benefit from Distribution Upgrade Deferral

Before actually describing the financials associated with T&D deferral, Bidders should note that the description of the process for estimating benefits (below) is made without regard to the type of EES used or to EES equipment and operation cost. It is up to Bidders to estimate costs associated with EES plants needed to make the deferral possible.

Furthermore, calculations shown below are made as if the EES plant being considered has the necessary power output and discharge duration. Though it may be obvious, system designers/integrators must design a EES plant with the necessary power output and discharge duration needed to serve the projected load growth. (The "sizing" process is summarized above).

Given that caveat, consider again the example shown in Figure above. In that example the "upgrade factor" is .33 (i.e., 33% more capacity – 3 MVA – will be added to the distribution node when it is upgraded).

Assuming that the EES plant has enough power output and sufficient discharge duration: a one-year deferral of a 3 MW distribution upgrade, for which the utility's cost to own and to operate is $50/kW-year, is worth
$50/kW-year * 3,000 $kW_{upgrade}$ = $150,000 for one year.

However, from Figure only 225 kW of EES is required for a one-year deferral. So, in this example, the benefit associated with deferring the 3 MW distribution upgrade by one year, using EES is:
$150,000 / 225 $kW_{storage}$ = $666 / $kW_{storage}$.

If the EES will be used in one of the highest cost locations (i.e., where the 90^{th} percentile distribution upgrade cost of $80/kW-year cost prevails) then the single year deferral value for the 3 MW upgrade is:
$80/kW-year * 3,000 $kW_{upgrade}$ = $240,000 for one year.

To defer the 3 MW upgrade costing $80/kW-year EES capacity required is 225 kW. The benefit for a one year deferral of an upgrade costing $80/kW-year is:
$240,000 / 225 $kW_{storage}$ = $1,067 / $kW_{storage}$.

Financial Benefit from Transmission Upgrade Deferral

Estimating benefits of deferring transmission upgrades is the same as the process used to estimate distribution system benefits. In California there is one

significant transmission project that is assumed to be deferrable. It is a high voltage line to extend from Southern to Northern California. It is referred to as Path 15. The existing load carrying capacity is about 3,900 MW and the upgrade has an estimated cost of ~$500 Million.[13]

Assuming a load growth rate of 2.5%/year, the load to be carried in year 1 of the line's existence would be 3,900 MW * 2.5% = about 100 MW. So, in theory a 100 MW EES plant could be used to serve load growth in year 1 and thus could be used to defer the 3,900 MW project for one year.[13]

Using the 0.13 standard assumption value for fixed charge rate the single year deferral benefit = $65 Million.

The single year benefit associated with use of EES to defer the transmission project is $65 Million/100 $MW_{storage}$ = $650/$kW_{storage}$.

Bidders may want to learn more about PIER's perspective on T&D R&D needs in California. That information is available at http://www.energy.ca.gov/pier/strat/strat_research_trans6.html.[14]

Multi-Year Deferrals

If EES is used to defer an upgrade for more than one year the same evaluation described above (estimating EES capacity requirements, single year EES deferral benefit, and EES discharge duration) is undertaken to determine whether the next year of deferral is cost-effective.

If EES *is* used to defer a specific upgrade for more than one year, EES that was added in previous years must remain in place. That is, EES capacity used for deferral in subsequent years is added to the existing EES capacity, with additions sized to keep pace with load growth.

It is safe to assume that in most cases, at some point in time, the T&D upgrade will take place. If so, the EES can remain in place (for arbitrage) or it could be moved to another location for additional capacity benefits, as described in the next section.

EES Redeployment and Portability

One way that a given EES plant could provide multiple years of distribution capacity upgrade deferral benefit involves moving the EES from one deferred T&D upgrade to another. This, of course, requires that the EES system can be disconnected, moved, and reconnected, with modest effort and cost.

Even if this is done just once in the ten year life of the EES plant, the effect on EES' cost effectiveness can be dramatic. In the example above, EES provides a one year deferral benefit of $666/kW of EES. So EES used for two similar situations, in different years could provide benefits of $666/kW in year 1 and

another $666/kW in the future year. (Of course the benefits accruing in future years must be discounted to adjust for the time value of money before being summed.)

Though less likely, EES could also be used to address different winter and summer T&D deferral sites, in the same year.

Note that the cost to redeploy the EES system must be included in the mature cost for the system.

Benefit #3 T&D Support Benefits

Description

It is possible that use of EES could improve the performance of the T&D system. For any given location, to the extent that EES support increases the load carrying capacity of the transmission system, a benefit accrues if:

- additional load carrying capacity defers the need to add more transmission capacity and/or additional T&D equipment
- additional capacity is “rented” to participants in the wholesale electric marketplace (to transmit energy)

Estimating Avoided Cost due to T&D Support

Benefits described above are gross benefits. When evaluating the merits of using EES for T&D support the upper bound (of the benefit) is the cost for the standard utility solution. For example, if capacitors are the proposed solution then EES offsets the need (and cost) for those capacitors. The “avoided cost” is the resulting benefit from EES for the T&D support application.[6]

The following financial benefit values (listed in Table 6) are estimated based on related research by the Electric Power Research Institute.[1] [2] That research addresses superconducting magnetic energy storage used for T&D support needs in Southern California during hot summer conditions when the need is greatest and when the benefits are highest.

Table 6. T&D Support financial Benefits—Standard Assumption Values

Benefit Type	Annual Benefit ($/kW-year)	Lifecycle Benefit ($NPV/kW)[#]
Transmission Enhancement	13	96
Voltage Control (capital**)	n/a	25
SSR Damping (capital**)	n/a	14
Underfrequency load-sheading/occurrence	11	34 ***
	Total	**169**

*Benefits are for Southern California, assuming hot summer conditions, circumstances for which benefits are highest.

**The benefit is the cost of the most likely alternative (e.g.; capacitors), that would have been incurred, if storage was not deployed.

***$11/kW per occurrence, assume 3 occurrences over the life of the unit. This value does not account for time-value-of money.

[#] Based on an NPV factor of 7.17.

Based on these values the standard assumption value for lifecycle benefit from T&D support benefit is $169/kW.[1] [2] [6]

Benefit #4 Reduced Time-of-Use Energy Cost

Description

To reduce electricity end-users' time-of-use (TOU) energy cost, EES is charged with low-priced energy (typically during off-peak periods) so the energy can be used (discharged) when energy price is high (typically during on-peak periods). The overall reduction in cost for electric energy is the benefit associated with use of EES. This benefit applies to commercial and industrial electricity end-users that qualify for TOU energy prices; TOU prices are specified in the applicable utility tariff.

Typically, TOU energy prices vary by time of day, day of the week, and season of the year. There may be two or more price points specified. The general intent of TOU rates is to give customers an incentive to use energy during off-peak periods rather than on-peak, thereby reducing peak demand on the utility supply system. To the extent a customer must use energy on-peak, EES can help to mitigate those costs.

The standard assumption value for this benefit is calculated based on PG&E's

A-6 Small General Time-of-Use Service tariff. Commercial and industrial (C&I) electricity end-users whose power requirements are less than or equal to 500 kW are eligible for the A6 tariff.

The prevailing energy price is shown relative to the hour of the day, for the A-6 tariff, in Figure 14 below, for the summer billing period of May to October. During winter months (November to April) there is no on-peak price period (i.e.; the mid-peak price applies during the entire day).

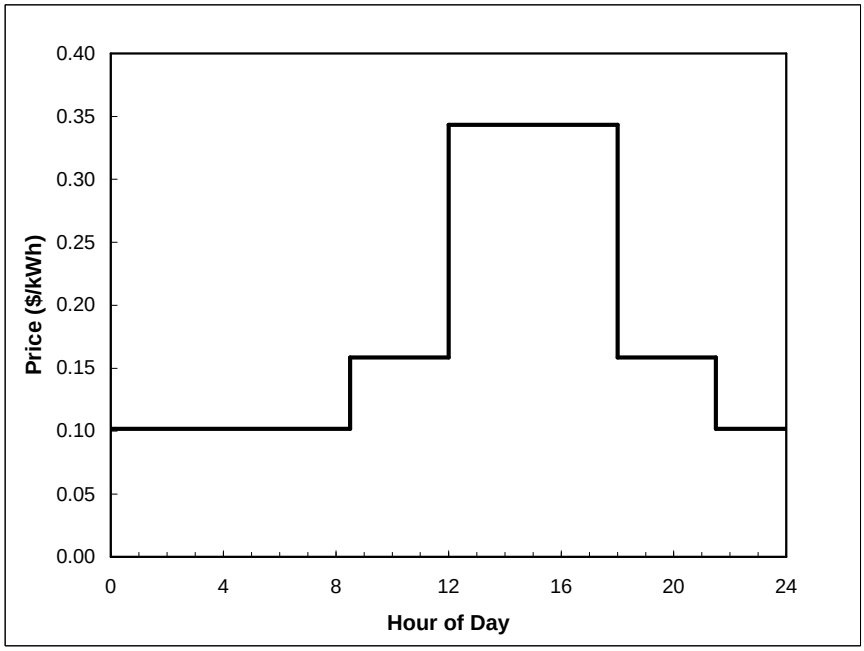

Figure14. Time-specific Price for Electricity – A6 Tariff, Summer

Time-of-use electricity prices are:

Period	Time-of-day	Price
Partial-peak	8:30 A.M. to 12:00 P.M.	15¢/kWh
On-peak	12:00 P.M. to 6:00 P.M.	32¢/kWh
Partial-peak	6:00 P.M. to 9:30 P.M.	15¢/kWh
Off-peak	9:30 P.M. to 8:30 A.M.	10¢/kWh

Estimating Reduced Time-of-Use Energy Cost

There are 720 hours per year during which the on-peak energy price applies. A EES plant whose discharge duration is six hours would allow the end-user to avoid annual on-peak energy charges of:
32¢/kWh * 720 hours/year
= $.32/kWh * 720 hours/year
= $230/kW-year

For an 80% efficient EES system, the cost to charge the EES plant

(for 720 hours of discharge) using low-priced, off-peak energy priced at 10¢/kWh is:
10¢/kWh * (720 hours/year ÷ 80% efficiency)
= $.10/kWh * 900 hours/year
= $90/kW-year

The cost reduction realized is:
$230/kW-year - $90/kW-year
= $140/kW-year

To express that annual benefit in units of $/kW, the annual cost is multiplied by 7.17.
$140/kW-year * 7.17
=$1,004/kW

Note that the EES could have a discharge duration that is less than the duration of the on-peak price period. If, for example, a two hour EES plant is used then the annual benefit is:
2 hours/6 hours * $140/kW-year
= .33 * $140/kW-year
= $46.2/kW-year

The EES duration selected depends on the cost of additional EES versus the incremental benefit.

Note also that the benefit estimation illustrated above does not account for variable maintenance cost incurred as the EES plant is used (including overhauls and subsystem replacement, as applicable). Those costs are part of the Bidder's estimate of the total cost for mature EES plants like those being demonstrated.

Benefit #5 Reduced Demand Charges

Description

Reduced demand charges are possible when EES is used to reduce an electricity end-user's use of the electric grid during times when demand on the grid is high (i.e., during peak electric demand periods).

To reduce demand charges, EES is charged with low priced energy so the energy can be used (discharged) when demand charges apply. The overall reduction in cost due to demand charges is the benefit associated with use of EES.

This benefit applies to commercial and industrial electricity end-users that qualify for electric utility tariffs that include demand charges.

Estimating Reduced Demand Charges

Typically, demand charges apply during afternoon and evening hours of the day, during late Spring to late Autumn. There may be two or more demand charge levels that apply during different parts of the day or year.

The standard assumption value for this benefit is calculated based on PG&E's E-19 Time-of-Use Energy and Demand Charges tariff. It applies to commercial and industrial end-users with peak load that exceeds 500 kW.

Figure 15 below shows diurnal demand (on the grid) with and without EES used to reduce demand charges, for an industrial facility with a constant electric load of 1 MW. The dashed line indicates that the EES plant serves all load for the six hours during which demand charges apply and that the EES plant charges for 7.5 hours at night when demand charges do not apply.

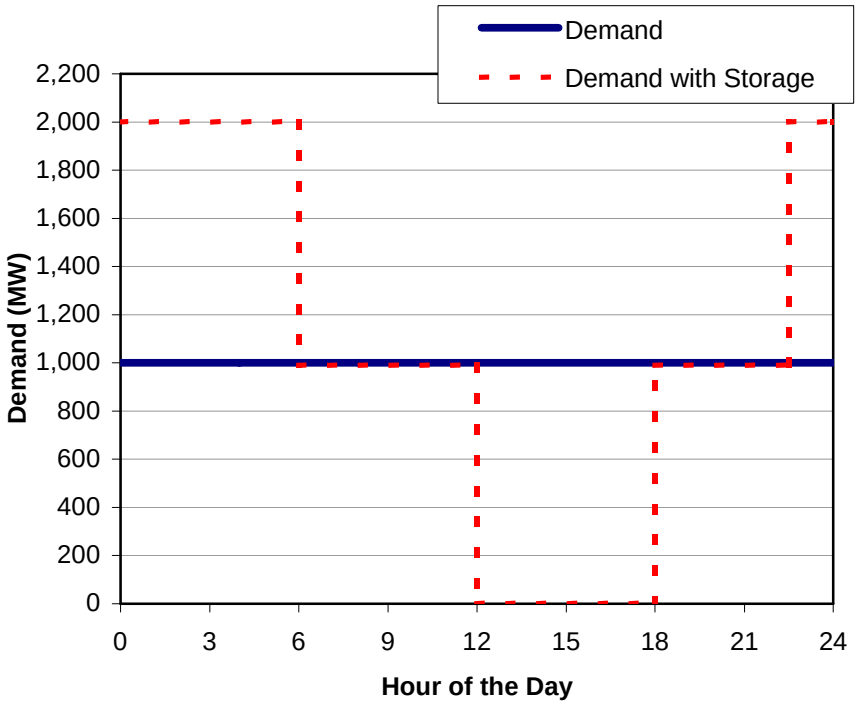

Figure 15. Constant Demand and Demand with Storage used to Reduce Demand Charges

It is very important to note that demand charges are applied rigorously, on a monthly basis. The implications are that if the EES system should fail to serve load at any time during the month when demand charges apply, then demand charges are assessed for the entire month. Bidders should take that into account when considering related effects associated with EES system reliability.

The E-19 tariff assesses $13.35 per kW per month on-peak, and $3.70 per kW per month ($/kW-month) during partial-peak periods (time periods are the same as described above for the PG&E A-6 tariff). In addition, customers are charged

$2.55/kW-month for the maximum demand, regardless when it occurs. (In effect, if a customer's maximum demand occurs during the period when peak demand charges apply then the on-peak peak demand is added to the "any time" charge.)

Assuming a EES system will discharge every hour in a given month during which the on-peak demand charges apply, the customer saves $13.35/kW-month. However, as shown in Figure above, load is added at night (for storage charging). So an additional $2.55/kW-month any time demand charge is incurred by the customer.

The total demand charge reduction (benefit) is:
$13.35/kW-month – $2.55/kW-month
= $10.80/kW-month

That benefit applies for six months per year, for a total annual benefit of:
$64.8/kW-year

Lifecycle benefits are calculated by applying the NPV factor of 7.17 so the annual value translates to a lifecycle benefit of $465/kW-year.

The total partial peak demand charge reduction (benefit) is:
($3.70/kW-month – $2.55/kW-month) * 6 months/year
= $1.15/kW-month * 6 months/year
= $6.9/kW-year

For a ten year life, the net present value is:
7.17 * $6.9/kW-year
= $49.5/kW

Of course, there are also energy implications of this operation. Most tariffs that include demand charges also have time-of-use energy prices, but some do not. The PG&E E-19 tariff is an example (as shown below).

Tariffs that include a demand charge and that use a constant/single energy price (for all hours of the year) tend to be less favorable for EES.

The rate structure used for this example – PG&E's E19 Tariff – has time-specific energy prices of:

Period	**Time-of-day**	**Price**
Partial-peak	8:30 A.M. to 12:00 P.M.	11¢/kWh
On-peak	12:00 P.M. to 6:00 P.M.	19¢/kWh
Partial-peak	6:00 P.M. to 9:30 P.M.	11¢/kWh
Off-peak	9:30 P.M. to 8:30 A.M.	9¢/kWh

There are 720 hours per year during which the on-peak energy price applies. A EES plant whose discharge duration is six hours would allow the end-user to avoid annual on-peak energy charges of:
19¢/kWh * 720 hours/year
= $.19/kWh * 720 hours/year
= $137/kW-year

For an 80% efficient EES system the cost to charge the EES plant (for 720 hours of discharge) using low-priced, off-peak energy priced at 9¢/kWh is:
10¢/kWh * (720 hours/year ÷ 80% efficiency)
= $.09/kWh * 900 hours/year
= $81/kW-year

The energy cost reduction realized is:
$137/kW-year - $81/kW-year
= $56/kW-year

To express that annual benefit in units of $/kW the annual cost is multiplied by 7.17. The lifecycle energy-related cost reduction is:
$56/kW-year * 7.17 = $401/kW.

When adding the benefits associated with demand charge reduction and with incidental energy cost the total lifecycle cost is
$465/kW-year + $401/kW
= $866/kW.

Benefit #6 Reduced Reliability-related Financial Losses

Description

Benefits associated with improved electric service reliability accrue if EES reduces financial losses associated with power outages. This benefit is end-user-specific and applies to commercial and industrial (C&I) customers, primarily those for which power outages cause moderate to significant losses.

The two approaches suggested below yield benefits that are somewhat generic. Bidders may suggest and document an approach that provides specific reliability benefits (e.g., for a specific type of end-user).

Estimating End-user Reliability Benefit – Value-of-Service Approach

For the value-of-service approach, the benefit associated with increased electric service reliability is estimated using two criteria: 1) annual outage hours – the number of hours per year during which outages occur, and 2) the value of "unserved energy" or value-of-service (VOS); units are $/kWh.

The standard assumption value for annual outage hours is 2.5 hours per year. For the RFP, a value-of-service of $20/kWh is recommended.[16]

To calculate annual reliability benefit, the standard assumption total annual outage hours is multiplied by the VOS.
$20/kWh * 2.5 hours per year
= $50/kW-year.

To calculate lifecycle benefits over ten years, the annual reliability benefit of $50/kW-year is multiplied by the NPV factor of 7.17. Lifecycle benefits are:
$50/kW-year * 7.17
= $359/kW

Estimating End-user Reliability Benefit – The "Per Event" Approach

Reliability benefits may be estimated by ascribing a monetary cost to losses associated with power system "events" lasting one minute or more and that cause electric loads to go off-line.[8] Reliability events considered are those whose effects can be avoided if EES is used.

Based on a survey of existing research and known data related to electric service reliability, a generic value of $10/event for each kW of end-user peak load has been chosen.[8] [9]

The standard assumption value for the annual number of events is five.[8] The result is that EES used in such a way that the end-user can avoid five electric reliability events, each worth $10 for each kW of end-user peak load yields an annual value of $50/kW-year.[8]

Finally, multiplying by the NPV factor of 7.17 leads to a lifecycle benefit of $359/kW.

Benefit #7 Increased Revenue from Renewables Capacity Firming

Description

Intermittent generation sources – including renewables – can produce electric energy reliably and in the case of wind, at a cost that competes with conventional generation. However, because intermittent renewables cannot be counted on to serve load when needed, often there is a need to provide for "firm" generation (generation that is "dispatchable") to augment the renewables.

EES could be used to time-shift electric energy generated by renewables. Energy is stored when demand and price for power are low, so the energy can be used when a) demand and price for power is high, and b) output from the intermittent renewable generation is low.

If that is done, then the renewables-EES system would be able to provide firm power when needed, using renewable energy. Note that, in many cases generation need only provide power for 200 hours per year or less; during times when demand for power is highest.

Estimating Revenue from Grid-connected Renewables' Capacity Firming

The additional (incremental) revenues that accrue (or cost that can be avoided) because EES is used (in conjunction with wind generation) is the financial benefit associated with renewables capacity firming.

The calculation below assumes that the EES plant used to firm up the wind generation plant's output has the same nameplate rating as the wind generator.

The upper bound benefit for dispatchable generation capacity would be the annual carrying cost for a new combined cycle power plant on the margin. The standard assumption value for the annual benefit is $65/kW-year. If additional capacity will come from older or refurbished power plants, especially peaking power plants, then the benefit for generation capacity may be as low as $30/kW-year. (Of course, if a region has more generation capacity than needed then adding EES to wind generation may be worth little or nothing.)

However, renewables normally generate electricity at some level during peak demand periods when utilities need peaking capacity. As a rule solar energy tends to provide a "full load equivalent" output of 80% of its nameplate rating during peak demand periods.

The implication is that capacity firming for solar energy plants provides only 20% of the total capacity value. If a combined cycle plant is on the margin (is the next plant planned) for the electric supply system then firming solar generation capacity provides 20% * $65/kW-year = $13/kW-year. If the lower cost peaking resource described above is on the margin then the benefit is 20% * $30/kW-year = $6/kW-year.

Wind generation's correlation with peak demand tends to be much lower than that for solar generation: the standard assumption value is .3 (30%). So capacity firming can provide benefits equal to 70% (1 - .3) of the full cost of the capacity source that is on the margin.

If capacity on the margin is a combined cycle plant then the capacity firming benefit is:
70% * $65/kW-year
= $45.5/kW-year

If the lower cost peaker is on the margin, the benefit is:
70% * $30/kW-year
= $21/kW-year

As with other single year benefits, values expressed in units of $/kW-year are converted to lifecycle costs by multiplying by 7.17.

Benefit #8 Increased Revenue from Renewable Energy Time-shift

Description

Intermittent generation sources – including renewables – produce much of their electric energy when that electricity has low value (i.e., when energy use is low and/or when there is already enough generation on-line.)

EES could be used to time-shift energy production from times when the value of the energy is low, such that the energy can be used when a) demand for power is high, and b) EES owners can sell the energy for a large premium.

This benefit is distinct from that for renewables capacity firming: in the most fundamental terms capacity firming is done to avoid the need for generation equipment whereas the benefit associated with the renewables energy time-shift is related to reduced fuel use during peak demand periods for central generation plants.

Estimating Renewable Energy Time-shift Benefits

The following estimation approach is for an EES plant whose nameplate output is equal to the wind generation plant's output. The EES plant operation is like load-following in reverse: the EES plant "fills in" during peak demand periods such that a constant level of power is provided. At some times the EES is providing most of the energy, and at other times the EES provides a small portion of the energy.

Standard assumption values for energy prices for this benefit are based on the time-specific prices paid under terms of some existing Standard Offers in California. The period of performance for these standard offers is about ten remaining years, in most cases.

Time-specific prices of interest are those that apply during weekdays for four summer months (June through September), for a total 87 weekdays per year.

They are:

Period	Time-of-day	Price
Mid-peak	8:00 A.M. to 12:00 P.M.	8.6¢/kWh
On-peak	12:00 P.M. to 6:00 P.M.	33.3¢/kWh
Mid-peak	6:00 P.M. to 11:00 P.M.	8.6¢/kWh
Off-peak	11:00 P.M. to 8:00 A.M.	4.6¢/kWh

The actual benefit (associated with adding EES) is the difference between what the energy would be worth if not time-shifted versus benefits accruing if EES is used.

Two factors are worth noting:

- 30% of wind generation (energy output) occurs during the on-peak price period without EES – wind generation's on-peak energy price correlation.
- The average prevailing price during "non-peak" price periods (i.e., during off-peak and mid-peak price periods) is an average of 6.6¢/kWh (the average of 8.6¢/kWh and 4.6¢/kWh for nine hour each). That is the benefit for the wind generation produced during non-peak times if that energy is sold as it is generated.

The generalized benefit calculation methodology for this benefit begins with an estimate of the marginal revenues associated with adding EES to wind generation.

First the number of hours per day (during peak price periods) that the EES must discharge is calculated as follows. Assuming that the EES plus wind generation system will provide power for six hours per day (during which the high price prevails) and using the on-peak energy price correlation of 30%, the number of hours of "time-shift" is:
6 hours per day * (1- 30%)
= 4.2 hours per day

From above, there are 87 weekdays per year during which this occurs. The annual hours are:
87 days per year * 4.2 hours per day
= 365 hours per year

The gross revenue is:
33.3¢/kWh * 365 hours per year
= $121.5/kW-year

Applying the NPV factor of 7.17 the lifecycle revenues are:
$121.5/kW-year * 7.17
=$871/kW

Finally, the benefit that would have accrued if the energy used to charge the EES was sold real-time to the grid. From above, the average price for that energy is 6.6¢/kWh. For an 80% efficient EES plant to discharge for 365 hours per year it must charge for 365/.8 = 456 hours per year.

If that energy is sold real-time (rather than using it to charge EES) it would provide revenues of:
6.6¢/kWh * 456 hours per year
= $30.1/kW-year

Lifecycle revenues would be:

$30.1/kW-year * 7.17
=$216/kW

The lifecycle benefit associated with adding EES is:
$871/kW - $216/kW
=$655/kW

Note that the foregoing discussion of benefits does not account for related variable costs. Those must be addressed in cost estimates for mature plants used like the system to be demonstrated.

Benefit #9 Avoided Central Generation Capacity Cost

Description

For areas where the supply of electric generation capacity is tight, EES could be used to offset the need to: a) purchase and install new generation and/or b) "rent" generation capacity in the wholesale electricity marketplace. If so, then the resulting cost reduction (or avoided cost) is the benefit associated with EES used for this application.

Estimating Avoided Central Generation Capacity Cost

It is important to note that in many wholesale electricity markets generation capacity cost is not separated from energy costs. In those regions the generation capacity cost is embedded in the price per unit of energy purchased. If so, there is no explicit capacity cost or charge that can be avoided nor is there a way to "sell" generation capacity.

If a credible case can be made for a generation capacity benefit from EES that is separate from energy related benefits then the Bidder will need a rationale for estimating the financial benefit.

For California the most likely type of new generation plant "on the margin" is a natural gas fired combined cycle power plant costing an estimated $500/kW. Applying a fixed charge rate of 0.13 yields an annual cost of $65/kW-year. Applying the NPV factor of 7.17 the lifecycle benefits (for a EES plant used for ten years) are:
$65/kW-year * 7.17
= $466/kW

Arguably this is the maximum possible value. For EES plants to provide that much benefit they must operate in such a way that they actually offset the need for additional generation.

A more conservative/lower bound value would be $30/kW-year; representing the cost to own and to operate an older simple cycle turbine-based power plant,

probably a used one.[11] (Such plants may not meet air emission requirements if they must operate for more than a very small portion of the year.)

Applying the NPV factor of 7.17 the lifecycle benefits (for a EES plant used for ten years) are:
$30/kW-year * 7.17
= $215/kW

Another possibility for ascribing a financial value to this benefit is price-based, where price is set by the electricity marketplace, probably at the wholesale level. If applicable, electric supply capacity prices could be used to estimate this benefit.

However this benefit is estimated, Bidders should provide a credible rationale for the assumptions and approach used.

Benefit #10 Ancillary Services

Description

It is well known that EES can provide several types of ancillary services. In short, these are what might be called support services used to keep the regional grid operating. Two familiar services are spinning reserve and load following.

Estimating Benefits of Ancillary Services

In short, it is difficult to generalize benefits associated with ancillary services; the topic is complex. Ancillary services have several manifestations. Even definitions (of individual ancillary services) vary among entities and regions.

The market for ancillary services is just opening up so there is limited history upon which to draw when trying to determine the benefit. The cost for many ancillary services is very volatile. Some vary over very short time periods. They are often location, time-of-day, and season-specific. For EES, the amount of ancillary benefits that may be realized is affected by discharge duration.

A standard assumption value of $10/kW-year is suggested.[11] That value, though conservative, could add enough extra benefit to make some EES systems cost-effective.

Applying the 7.17 NPV factor, the lifecycle benefits are an estimated $71.7/kW.

Benefit #11 Avoided Transmission Access Charges

Description

Typically, utilities that do not own transmission facilities must pay the transmission owners for transmission “service.” That is, when non-owners use the transmission system to move power to and/or from the wholesale

marketplace owners must recoup carrying costs and operations and maintenance cost incurred. Related charges are often called transmission access charges.

Also, in many areas transmission capacity additions are not keeping pace with electric peak demand growth. Results include: 1) transmission systems that are becoming congested during periods of peak demand, and 2) increasing transmission access and congestion costs and charges.

Storage could be used to avoid those costs and charges, especially if the charges become onerous due to significant transmission system congestion. To do that, energy stored off-peak is discharged to reduce transmission capacity requirements during peak demand periods.

Estimating Avoided Transmission Access Charges

Benefits associated with avoided transmission access charges cannot be generalized. They depend on, among other factors, EES discharge duration, location, time-of-year and time-of-day. Furthermore, in California the marketplace for transmission capacity is just taking shape.

A standard assumption value of $10/kW-year is used.[11] Applying the 7.17 NPV factor, the lifecycle benefits are an estimated $71.7/kW.

Though probably conservative, even that amount might provide enough extra benefit so that some EES systems (installed for other purposes) may be cost-effective.

Benefit #12 Reduced PQ-related Financial Losses

Description

This benefit is end-user-specific and is difficult to generalize. It applies primarily to C&I customers, primarily those for whom power outages cause moderate to significant losses.

Specific types of poor power quality (PQ) are well documented. Technical details are not covered herein.

In the most general terms PQ-related financial benefits accrue if EES reduces financial losses associated with power quality anomalies. Power quality anomalies of interest are those that cause loads to go off-line and/or that damage electricity-using equipment and whose negative effects can be avoided if EES is used.

As an upper bound, the PQ benefit cannot exceed the cost to add the “conventional” solution. For example: if the annual PQ benefit (avoided financial loss) associated with an EES system is $100/kW-year and basic power

conditioning equipment costing $30/kW-year would solve the same problem if installed, then the maximum benefit that could be ascribed to the EES plant for improved PQ is $30/kW-year.

For this RFP, total lifecycle benefits from PQ may not exceed 30% of total benefits associated with a specific demonstration. Likewise, total lifecycle benefits from PQ for a mature/commercial plant may not exceed 30% of total mature benefits.

Estimating Reduced PQ-related Financial Losses

PQ-related benefits may be estimated by assigning a monetary cost to losses associated with PQ "events" lasting less than one minute and that cause electric loads to go off-line.[8] PQ events considered are those whose effects can be avoided if EES is used.

Based on a survey of existing research and known data related to PQ, a generic value of $5/event for each kW of end-user peak load is the standard assumption value for this RFP. Also based on the same information, the standard assumption value for the annual number of events is 20.[8] [9]

The result is that EES used in such a way that the commercial or industrial electricity end-user can avoid 20 power quality events per year, each worth $5 per kW of end-user peak load, provides an annual benefit of $100/kW-year.

After multiplying by the NPV factor of 7.17 the lifecycle benefit is $717/kW. Implicit in that approach is the assumption that the PQ benefit is the same (in real dollar terms) for each of ten years.

Benefit #13 Incidental Energy Benefits

This section describes calculations used to estimate the benefit for energy discharged from EES, for capacity-related applications (e.g., T&D deferral, demand charge reduction, transmission support, etc.).

For this RFP, when EES is used for capacity-related applications, any financial benefit associated with the energy discharged is referred to as being "incidental" to the overall benefit.

The amount of incidental energy discharged and the associated benefit are application and situation-specific.

Perhaps the most extreme example is EES used for T&D support. Assuming total discharge duration of five seconds, the EES plant may discharge for less than an hour, total, in a year; though it may provide significant capacity benefit. (The plant would discharge less than 1 kWh of energy, per year, per kW of EES plant rated output.)

In that case it is not worth calculating the incidental energy benefit. However, if EES is used in such a way that it discharges during the times when energy price is high then it may be worth estimating the incidental energy benefit.

Grid-price-based

Figure 16 plots the relationship between the running average of the prevailing price for wholesale electric energy (shown on the Y axis) for the 1,000 highest load hours during the year, in California.[3]

Consider an example. An EES plant with two hours of discharge duration, used for T&D deferral, discharges for 20 hours per year (two hours, ten times per year).

If the EES happens to discharge during the 20 hours when forecasted energy prices are highest then the average price (benefit) is $180/MWh, or 18¢/kWh.

At 18¢/kWh for 20 hours per year the annual benefit is:
$.18/kWh * 20 hours per year
= $3.6/kW-year

The lifecycle benefit is:
$3.6/kW-year * 7.17
= $26/kW

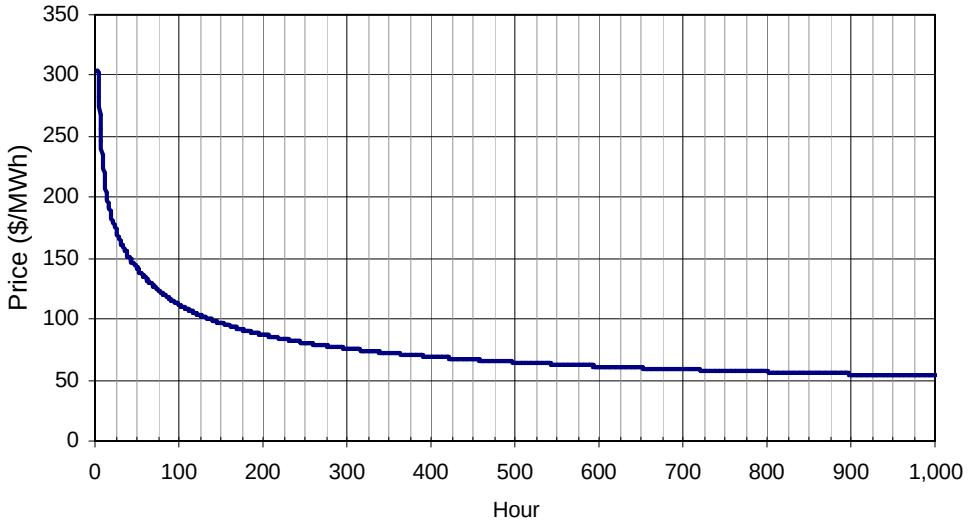

Figure 16. Running Average Energy Price ($2003), 1,000 Hours

However, if energy production does not correspond with times when electric energy price is high, then the Bidder must establish the benefit using a credible

rationale such as using the average price during the times when incidental energy is discharged.

Tariff-based

If incidental energy is provided by an EES system used for an end-user application, especially for demand reduction, then the benefit is based on the variable charge/price for electric energy specified in the applicable utility tariff.

That is, the tariff that specifies the demand charge (units are $/kW-month) also specifies the corresponding energy prices. For example, the PG&E E19 tariff specifies an on-peak summer energy price of 19¢/kWh.

From the report subsection above entitled Benefit #5 Reduced Demand Charges, the incidental energy provides benefits of $56/kW-year and $401/kW lifecycle.

5. Combining Benefits

5.a. Introduction

In many cases more than one benefit is required from EES for benefits to exceed cost. Bidders must provide a rational for combining benefits.

Operational Conflicts

Operational conflicts involve competing needs for an EES plant's power output and stored energy. For example, EES providing power in lieu of a distribution upgrade deferral cannot be called upon to provide transmission congestion relief as well. EES providing T&D support may not be capable of providing a) enough power or b) power that is stable enough to serve the central generation capacity application.

So, when estimating combined benefits it is important that Bidders not add benefits from applications with conflicting operational needs.

Technical Conflicts

In some cases EES systems are physically unable to serve more than one need. One example is EES that cannot tolerate numerous deep discharges and/or significant cycling. These EES systems might be well suited to the T&D deferral application though they are not suitable for energy price arbitrage.

Another example is EES that cannot respond very rapidly to changing line conditions. Such systems may be suitable for energy arbitrage or to reduce demand charges but may not be able to provide T&D support or end-user PQ benefits.

Consider also EES system reliability. Less reliable (though lower cost) EES systems may be suitable for pursuit of energy arbitrage or time-of-use energy

cost reduction benefits; however, such systems could not be used for demand reduction, T&D support, or T&D deferral benefits.

Market Intersections

As described in Section 4 of this attachment and as illustrated in Figure 17, Bidders must consider how combining benefits may affect (reduce) the maximum market estimates.

Consider an example: end-users will use EES for demand charge reduction, reliability enhancement, and improved power quality. Market estimates would account for the following:

- Technical market potential is all commercial and industrial electricity end-users.
- However, only a portion of those end-users pay demand charges.
- For most commercial and industrial electricity end-users that pay demand charges, increased electric reliability is not a compelling issue.
- Only a portion of customers that pay demand charges and that are concerned with electric reliability will derive a financial benefit from improved power quality.

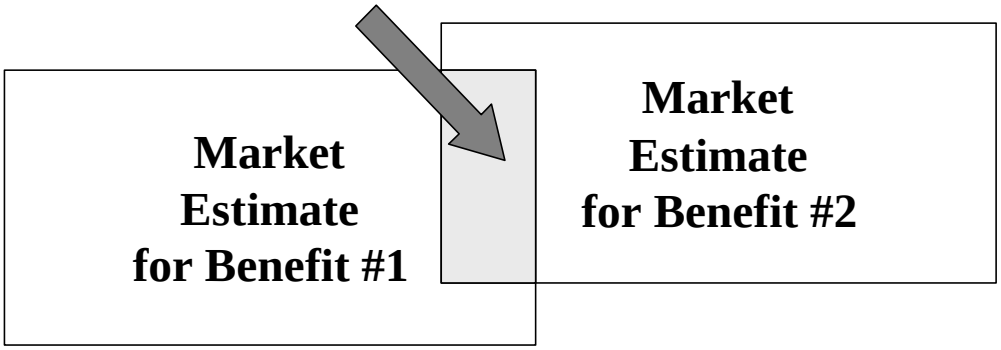

Figure 17. Market Estimation for Combined Applications/Benefits: Market Intersection

5.b. Energy Arbitrage Plus T&D Deferral

Perhaps the most compatible combination of applications is T&D deferral and energy arbitrage. In many, and perhaps most cases, localized T&D peak demand is coincident with "system" (supply and transmission) peak demand periods. The implication is that energy discharged for T&D deferral also provides incidental energy benefits. Furthermore, T&D deferral rarely requires more than a few tens of hours of discharge. As a result there are very few hours per year when power is needed for T&D deferral and which arbitrage transactions ("sell high") might be attractive (i.e., the most likely worst case is that discharge for T&D deferral may conflict with discharge needed for arbitrage transactions during only a few hours per year.)

The implication is that EES used to provide T&D deferral benefits can also provide arbitrage related benefits. Even if EES does not provide T&D deferral benefits in any given year, it can still operate to do arbitrage.

5.c. Time-of-use Energy Cost Savings Plus Demand Reduction

Figure 18 shows load and energy price implications for operation of an EES plant for the combined benefits of demand charge reduction and time-of-use energy cost reduction.

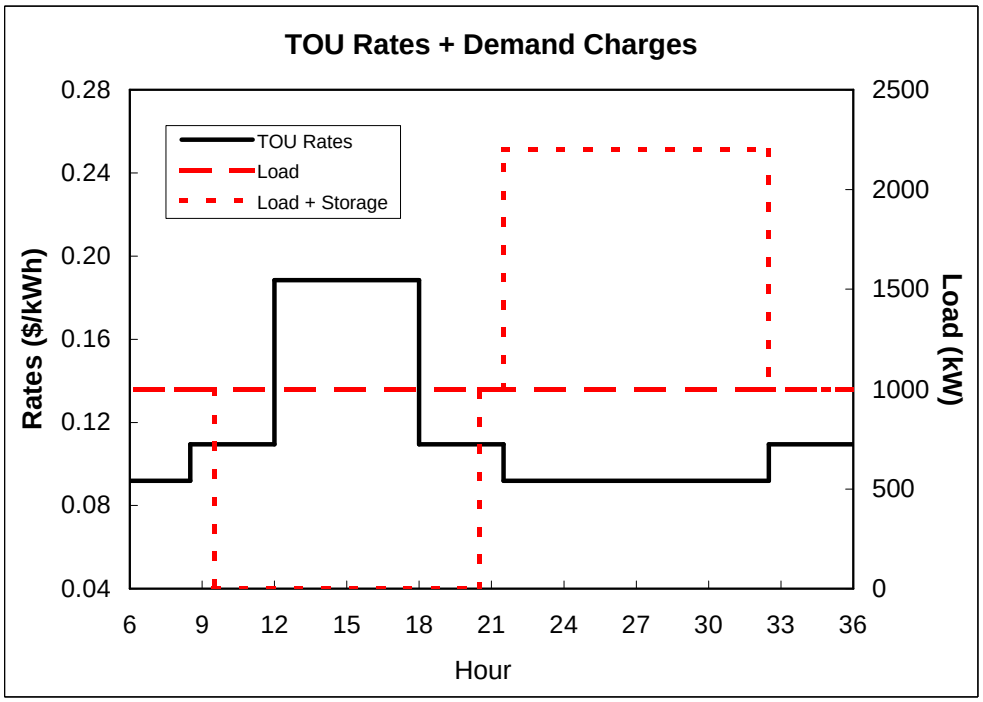

Figure 18. Demand Charge Reduction Based on PG&E's E19 Rate

For details about how to calculate the total benefits associated with EES operation for these two complimentary benefits, please see the discussion of demand charge reduction benefits in Section 4 of this attachment. In that section, calculations for both the demand charge reduction and the related energy benefits are shown.

5.d. Renewables Time Shifting Plus Arbitrage

It is often suggested that energy EES could be used to significantly increase the value of renewables' intermittent output. In many cases, though, the incremental benefit may not be commensurate with the incremental cost of the EES plant.

Another possibility is a project involving use of EES to time-shift electricity from intermittent renewables and for energy price arbitrage. That would allow EES to provide more services and presumably additional benefit, such that the

incremental benefit of EES is increased, hopefully to the point where it is cost-effective.

It may even be that EES could be “decoupled” from the EES plant physically such that other benefits may accrue as well. For example, EES used in conjunction with wind generation could provide T&D support or even, conceivably, T&D deferral benefits; depending on the EES system’s location.

End Notes

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[10] Electric Power Research Institute. Evaluation of SMES for San Diego Gas and Electric. August 1997. EPRI Report TR106286.

[11] Standard assumption values for the Avoided Transmission Congestion Charges and T&D support applications and standard assumption values for benefits that are not listed as applications (Avoided Cost for Central Generation

Capacity, Ancillary Services, and Avoided Transmission Access Charges) are "placeholder" values.

Bidders may provide alternate estimates for these standard assumption values though the rationale and assumptions used must have credible bases. Examples include letters from the California ISO or a utility, contracts to provide ancillary services with the California ISO or a utility, engineering calculations from a knowledgeable P.E., applicable information for systems outside of California, or credible simulation results.

One possible resource is the Federal Energy Regulatory Commission (FERC) http://www.ferc.gov/

Additional information may be available at the website for the California Independent System Operator (ISO) at http://www.caiso.com/

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